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RESCUE MISSION

The American Red Cross' new \$164M blood information system is a lifesaver—not just for patients, but for the Red Cross itself. *Business*, page 50



GOOD IMPRESSIONS

It's not just your answers, but the questions you ask during your job interview that show you have the skills, interest and company savvy to do the job. *Page 58*

COMPUTERWORLD

MARCH 29, 1999

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[MICROSOFT] TOLD US THEY HAVE OVER 70 ATTORNEYS WORKING ON OUR CASE. WE BARELY HAVE THAT MANY EMPLOYEES.

REITH BLACKWELL, CEO, ROISTOL TECHNOLOGY INC., ONE OF A RECORD NUMBER OF COMPANIES AND INDIVIDUALS Suing MICROSOFT FOR EVERYTHING FROM ANTITRUST TO CIVIL RIGHTS REASONS. SEE PAGE 1

AT DEADLINE

IT Decisions Loom in SSB Utilities Merger

Mississippi-based Northern States Power Co. is merging with New Century Energy Inc. in Denver to create a \$5 billion utility serving 12 states. A Northern States spokesman said no definite decisions had yet been made about information technology staffing or the computer systems that the combined company would use.

IT managers and workers from both companies will work on various transition teams for the next several months. The companies said they expect the merger to yield more than \$1 billion in cost savings in the first 10 years.

Sabre Unveils Reorganization Plan

The Sabre Group on Friday announced a plan to bring its sales, marketing and technology functions under one roof. The company, to be renamed Sabre Inc., will have a marketing and sales division and a product development and delivery division. *Transitivity.com* will continue as a separate operating unit.

Nasdaq Adopts Rule To Halt Stock Trades

The National Association of Securities Dealers Inc. last week proposed a rule that will let the Nasdaq Stock Market immediately halt trading of a company's stock because of corporate announcements and other news. Nasdaq's surveillance team now has to consult with the company before temporarily stopping stock trading. The new rule is being submitted to the Securities and Exchange Commission for approval.

Short Takes

MICROSOFT CORP. said it posted notices that make Office 95 year 2000-compliant at <http://officeupdate.microsoft.com/articles/0525tsfactsheet.htm>. . . . A Pepsi Food advocacy group surveyed 500 temporary workers at Microsoft and found nearly 80% would prefer full-time, permanent positions to their current contract status.

MICROSOFT, DOJ TO START TALKS

States are part of antitrust settlement meetings; legal experts say expectations on all sides make swift resolution doubtful

BY PATRICK THIBODEAU
WASHINGTON

Microsoft's first step toward settling its antitrust case last week appeared to fall short of satisfying government demands. Despite that, the parties plan to meet tomorrow for what could be the start of a long period of negotiations — or a quick round of talks that lead nowhere.

"All settlement talks envision proposals and counter-proposals," said New Mexico Attorney General Patricia Madrid after emerging from a meeting Thursday with attorneys general from the 19 states involved in the lawsuit. Microsoft delivered its initial settlement offer last week.

Legal experts say it's unusual in any antitrust case for an initial settlement offer to win acceptance. "The process usually moves in baby steps," said Hillard Sterling, an attorney at Gordon & Glickson PC in Chicago.

Separate from settlement talks, both sides will meet in court on Wednesday to discuss trial scheduling. The case has been on break since the end of February and could be delayed until May. Trial judge Thomas Penfield Jackson has been hearing another case that may continue for weeks.

For some users, the impact of any settlement — or a verdict if negotiations fail — is seen as minimal.

Even if a settlement forces Microsoft to change its ways, most people will continue to buy its products because of their near universal use, said Tom Halligan, a systems analyst at a New York-based company. "You are going to need Word and Excel at some point in your day... Without it, you are going to be unable to deal with other people," he said.

John Zoltak, a programmer and systems manager at North

American Manufacturing Co. in Cleveland, said companies will continue to use Microsoft's software because it's good. But he also said the danger is that if Microsoft were to enter a market and drive out competition, there would be nothing to keep prices in check. "I don't know what one can really do about this," Zoltak said.

"We intend to make a good-faith effort with the govern-

ment to see whether it is possible to resolve this case," said a Microsoft official, who requested anonymity.

But the company said it won't accept a settlement that hurts its "freedom to innovate" and "add new features" to its products, the official said.

Microsoft's oft-stated desire to preserve its ability to make its own product design decisions is one reason why legal experts say they see little

Kraft Lets Users Season ERP to Taste

Food maker changes plan for 53 identical installations, tweaks systems at 20 plants

BY CRAIG STEEDMAN

Kraft Foods Inc. is three months away from finishing an installation of identical ERP systems at 53 U.S. manufacturing plants. But the \$17 billion food maker is already going back to some plants and tweaking the software so it better fits their individual operations.

The reconfiguration work began in January after Kraft executives discussed "at length" whether they should complete the full rollout first or start answering user calls for changes from about 20 plants, said Fred Sherriff, vice president of operations systems at the Northfield, Ill., company.

The decision: Cut the plants some slack. Plant managers "had been very cooperative to move ahead with the installation without totally getting what they wanted," Sherriff said. "Now, we need to keep their enthusiasm and their buy-in [for the whole project]."

That kind of balancing act is typical for companies that buy enterprise resource planning (ERP) applications and then have to reconcile a corporate desire for common systems with the different needs of business units, said David

Dobrin, an analyst at Benchmark Partners Inc. in Cambridge, Mass.

"It's a problem that everybody faces, and there's no optimal answer," said Dobrin, who is familiar with Kraft's project.

JUST THE FACTS

Kraft Adjusts its ERP Recipe

What if wanted to be the first to install ERP software to its year 2000 problems and provide better corporate-wide business data.

What complicated things: The company's food processing plants are in many different locations, and don't have identical needs.

What Kraft is doing now: Continuing to roll out a common ERP system and simultaneously changing the configuration for some plants.

For a big company, installing a one-size-fits-all ERP system can be a particularly difficult task. Dobrin said. Just getting everyone to agree to start out with an identical ERP configuration was "very unusual and impressive" for a diversified manufacturer such as Kraft, which has eight product divisions ranging from cheese to frozen pizza to packaged meats, he added.

Sherriff said the need for a

possibility of a settlement.

"I think the expectations on the part of the states may not be realistic, and I think Microsoft may be still thinking their chances are significant on appeal," said Yee Wah Chin, an attorney at Squand, Ehrenfeld, Present & Sheinfeld LLP in New York.

Settlement talks could also lead to decisions by the U.S. Department of Justice or states to seek separate settlements.

But experts said that's unlikely.

If the parties split from one another, it "would lay bear what I think is a terrible weakness in antitrust" — the ability of state governments to override federal competition policy, said William Kovacic, a visiting professor at George Washington University Law School in Washington. ▀

fast year 2000 fix helped Kraft push ahead with its plan to install an identical configuration of Marcam Solman Inc.'s ERP software for IBM AS/400 systems. The rollout has reached about 45 U.S. plants now and is due to be completed by midyear, he said.

Kraft, a Philip Morris Co. subsidiary that was merged into one company in 1995, also wants to start doing more central business planning. But Sherriff said the plain-milk system forced some facilities, such as its cereal plants, to do manual work-arounds because the software wasn't set up to handle all their operations.

Alterations of the ERP system will likely continue for the rest of the year, Sherriff said, but there are limits to what Kraft will do. The changes all involve reconfigurations, not customization of the Marcam software, and everything has to be approved by a group of business executives from manufacturing, finance, sales, purchasing and other corporate departments.

"We're not going to give [the plants] more than what they need," Sherriff said. ▀

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JAVA, VISUAL BASIC SEEN AS LANGUAGES OF FUTURE

Move to Internet platforms forecast

BY DAVID DREINSTEIN

IT COULD BE the future of programming languages in the corporate world: Sun Microsystems Inc.'s Java and Microsoft Corp.'s Visual Basic will rule the enterprise, and developers will buy more and write less.

Those trends are forecast in projections of worldwide language usage by both Inter-

net and Visual Basic will have grown much more slowly — by only 3.5% annually — but will lead in sheer numbers, with more than 6.8 million users (see chart), according to the projections.

Java and Visual Basic also led the pack in the Computerworld survey: 45% of managers in the survey identified one of the two languages as the most important for their future development efforts.

Java and the Internet are clearly top choices at Aliso Viejo-based Bass Hotels and Resorts Inc. "There are so many people jumping on the Java bandwagon, it's amazing," said Eric Pearson, senior director of electronic commerce.

A desire to stay current with what's hot in the marketplace is the primary reason that 62 out of 107 companies surveyed by Computerworld are changing languages, such as from Cobol to Java or Visual Basic. The second-largest motive was that companies are planning to develop applications on new platforms as they move from mainframe/terminal environments to Web servers and browsers.

For example, Visual Basic is increasing in importance at Dakota City, Neb.-based IBP

Continental Shift

Which platform are most of your existing applications developed on?

Mainframe/terminal	27%
Windows server/client	22%
Unix server/workstation client	21%
Midrange server (AS/400)	14%
Other	15%

Base: Survey of 107 IT managers at companies with 500 or more employees.

SOURCE: COMPUTERWORLD'S IT PROJECTS SURVEY, 1999. © COMPUTERWORLD

On which platform will most of your future applications be developed?

Web server/browser client	32%
Windows server/client	21%
Unix server/workstation client	17%
Midrange server (AS/400)	9%
Other	2%

Inc. as the world's largest meat-packer updates its application platforms, said manager Jeff Williams.

The company's Internet developers are currently testing Visual Basic. IBP will use it to give users a graphical interface for its mainframe-hosted data. Indianapolis-based Eli Lilly & Co. wants to use the Internet

to make more of its data more accessible to users around the world, said project leader Mike Skiles. To do that, the company will use Java to write Web-based applications. But in general, the company isn't looking to increase its application development or load. Skiles said. Instead, it's buying more applications and customizing them

using whatever language is necessary.

Companies' desire to make application development less expensive and quicker by reusing what's available commercially or internally will make component-based development a major trend in the next four years, IDC predicted.

As component models such as Enterprise JavaBeans and Microsoft's Component Object Model mature and become more useful, component-based development will grow by 65.3% per year, taking it from 204,000 developers in 1998 to nearly 1.5 million in 2003, said IDC analyst and study director Stephen Hendrick.

"[It's] development metaphor is much more closely aligned with how organizations understand and seek to address business problems," Hendrick said. ■

MORE ONLINE

For resources related to Visual Basic, Cobol, Java, SmallTalk and C++, visit our Web site: www.computerworld.com/resources

Language Landscape

Market share of computer languages, based on licenses sold.

	1998	2003*
Visual Basic	33.5%	25.6%
C/C++	16.0%	17.9%
Internet**/HTML	12.4%	23.3%
Cobol	9.3%	5.2%
Java	4.1%	15.1%
Other	24.7%	13.1%

*Projected. **Tied with an Alter Golf Franchise, Microsoft franchise.

SOURCE: COMPUTERWORLD'S IT PROJECTS SURVEY, 1999. © COMPUTERWORLD

tional Data Corp. (IDC) in Framingham, Mass., and a survey of 107 application development managers by Computerworld.

IDC's projections show Java taking off at a rate of nearly 42% per year between 1998 and 2003, when the number of users will have grown to just

over 6 million. Visual Basic will have grown much more slowly — by only 3.5% annually — but will lead in sheer numbers, with more than 6.8 million users (see chart), according to the projections.

For example, Visual Basic is increasing in importance at Dakota City, Neb.-based IBP

Users Unmoved By Rumors of J++ Demise

Microsoft mum on future of its Java tool

BY DAVID DREINSTEIN

Amid persistent rumors that Microsoft Corp. will cancel its J++ Java development tool, several users are already looking beyond it.

"I wouldn't be too concerned because we are likely going to switch to [Symantec Corp.'s] Visual Cafe," said Thomas Johnson, principal scientific analyst at drug maker SmithKline Beecham PLC in King of Prussia, Pa. Johnson said he likes using J++ but expects that Microsoft will cease producing it. "We have a lot of Java applications, and we need to continue supporting them."

Rumors have been building that Microsoft would drop development of the tool. The company has been frustrated by a court battle in which Java creator Sun Microsystems Inc. has asserted that Microsoft has violated its license by fine-tuning Java for the Windows operating system.

Last week, Bill Dunlap, lead product manager for J++, wouldn't say whether there

will be another version after the current 6.0. Though he said it's against company policy to comment on the future of products, Microsoft executives routinely refer to upcoming ver-

sions. He said the courts need to clarify Microsoft's right to develop new Java technology before the company can be sure what direction it will take.

After grilling Microsoft about the future of J++ last month, Mike Gillips, an analyst at Cambridge, Mass.-based

Giga Information Group Inc., said he believes J++ will most likely be canceled. "I don't think it's an absolute certainty, but I would give it a greater than 50% probability," he said.

Marc DeMarie, a computer equipment supervisor at Pacific Gas & Electric Co. in San Francisco, said he won't



PGE's MARC DEMARIE says he won't miss J++

sions of various Windows flavors, browsers and applications.

But Dunlap asserted that Microsoft continues to develop technologies such as the virtual machine and Windows foundation classes that let Java run as well as possible on Win-

mis J++ because he's careful not to use any of its specific features, lest he become dependent on them.

Product life cycles are too quick for developers to become reliant on one tool's unique capabilities, he said. ■

Corrections

A March 8 Technology section story ("Joe Frazzini Is Our Hero," page 76) said Joseph P. Frazzini's first company, Semco, earned \$2 million in revenue in its first six months. The company garnered \$7 million in capital net revenue. The same story mentioned Frazzini's status when he left USWeb/CKS. He was CEO-designate.

A March 8 Technology brief ("Service Fracks Leads," page 65) misstated how ProspectSmart

software works and how it is priced. ProspectSmart, from Denver-based TargetSmart Inc., builds targeted prospect lists on a user's PC, rather than TargetSmart producing them. Its cost, ProspectSmart, which costs \$199, allows users to select any number of geographic and data combinations for 10 cents per name.

A March 15 Technology brief ("New Web PC," page 73) misstated an iStat.com Web product. The product is a PC,

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BRIEFS

29 States Looking At Y2K Legal Shields

Twenty-nine state and the District of Columbia are considering bills that would shield them from most year 2000-related lawsuits. If approved, they would follow the lead of California, Florida, Georgia, Hawaii, Nevada, Virginia and, most recently, South Dakota, which approved its law earlier this month.

Although the legislation is designed to protect states from insurance suits, critics contend such laws will hurt businesses affected by states' year 2000 failures.

Microsoft Wins Y2K Lawsuit

A federal judge has dismissed a year 2000-related lawsuit filed against Microsoft Corp. by an Illinois woman. She claimed the company negligently designed the way its FoxPro database software handles the century change on Jan. 1, 2000. But FoxPro lets users choose whether to require four-digit dates, so the judge said the product was year 2000-compliant.

First Mini PCI Card Delivered

3Com Corp., in Santa Clara, Calif., last week delivered the first Mini Peripheral Component Interconnect card. The 2- by 3-in. network card can be snipped in a variety of locations on a system board, giving hardware manufacturers more design flexibility and allowing local servicing of notebooks.

Short Takes

ELECTRONIC DATA SYSTEMS

COMP: last week announced a service that lets businesses send and receive any combination of electronic and paper-based bills and payments without upgrading legacy billing systems. . . . L. M. ERICSSON TELEPHONE CO. and QUALCOMM INC. have agreed to work toward a single, cellular code division multiple access (CDMA) standard, setting aside a technology dispute. . . . HEWLETT-PACKARD CO. will recall STRATUS COMPUTER INC.'s high-end and fault-tolerant systems.

HANDHELDS DON'T HAVE TO MEAN CHAOS

Products to provide synchronization and real-time access to corporate servers

BY MATT HAMILLEN

TECHNOLOGY managers facing the potential management chaos of handheld computing may get some relief from new products that provide more control over data synchronization and application development.

Competitors Puma Technology Inc. in San Jose, Calif., and Riverbed Technologies in Vienna, Va., today are announcing products that synchronize both major handheld platforms directly with a corporate server rather than a desktop PC.

And they're announcing application development tools to make it simple to transform data normally used in PCs to the smaller screens and capabilities of handhelds.

"We have desperately needed this type of technology and wanted it years ago, but it was either too expensive or unreliable until now," said Larry Smith, manager of information systems development at Technical Support Services Inc. in Ossining, N.Y.

Reducing Paper

Beginning next week, Smith plans to test the Puma and Riverbed products to let up to 250 network technicians nationwide log in work reports on Palm III handhelds connected to a corporate server over a wireless network.

Goals of the project are to eliminate paper billing and allow real-time dispatching.

"Our paper billing turnaround time is now two months, and with a system like this, we can reduce that to weeks or possibly days," Smith said. Smith is eager to upgrade to today's release of the application tool, Puma Satellite Forms Version 3.0, which conserves bandwidth because end users send only changes to files over the network rather than complete files.

Smith's new system also in-

cludes Riverbed's Scout server, which allows synchronization and real-time access to a server for central control and management. Server-based synchronization of handheld devices is a key strategy to give information technology control over an explosion in handhelds, analysts said (CW, Feb. 8). They welcomed the new announcements.

IT departments should try to pick a standard handheld device, but because end users will bring in their own anyway, it's important to settle on a standard for server synchronization, said Ken Dulancy, an analyst at Gartner Group Inc. in Stamford, Conn.

But Dulancy said Puma and

COMPANY/PRODUCT	FUNCTION	AVAILABLE
Puma Technology's Satellite Forms 3.0	Development kit	Now
Puma Technology's Vulcan	Combines server synchronization with development kit	Year's end
Riverbed Technologies' MobileArchitect	Development kit	May
Riverbed Technologies' Scout 3.0	Server synchronization	Now

other vendors should add monitoring capability to server synchronization so that companies know what data has flowed in and out of a server so it can be protected.

Matthew Nordan, an analyst at Forrester Research Inc. in Cambridge, Mass., said server synchronization must work

well with software development tools to be useful to a firm writing custom applications for mobile computing. ■

MORE ONLINE

For research links related to mobile computing, handheld devices and laptops, visit our Web site: www.computerworld.com/news

Home Depot Tooling Up for Online Shopping

A revamped Web site will be test bed for e-commerce offering

BY STACY GOLIAITI

The Home Depot Inc. is remodeling its Web site so that, by July, do-it-yourselfers will be able to order tools and products online.

The Atlanta-based home-improvement chain hired Oracle Online Inc. in San Francisco to rebuild its Web site, which now doesn't allow online sales (www.homedepot.com).

New interactive and personalized features will be added in May to gauge customers' interest in online shopping.

With the Home Minder feature, for example, customers will be able to communicate with the company by entering their location and other home information. Home Depot could then send e-mail to those customers about seasonal planting tips or sale offers.

Company officials wouldn't disclose the cost of the site renovations.

Officials said the new site will help determine who's willing to buy hardware online and what they're comfortable buying.

"We'll see about the effectiveness of converting those viewers into sales. It's a test of the products. We're not sure whether we can make money [online], but we're going to find out," said Jeff Cohen, Home Depot's group president of direct marketing.

Smaller competitor Lowes Cos. in North Wilkesboro, N.C., already sells online, offering Kobalt tools and Harbor Breeze ceiling fans at affiliated Web sites.

Lowes officials said they will begin selling other tools and

appliances on the company's own Web site this summer (www.lowes.com).

"[Online hardware shopping] is starting slowly. The thing that's attracting the most interest is tools. With other products, people want to go to a store and talk to an employee who can explain how to complete a project," said Chris Jensen, a spokesman for the National Retail Hardware Association in Indianapolis.

Home Depot plans to use San Diego-based Maintenance Warehouse Inc., a business-to-business catalog operator it bought in 1997, to handle the pick-and-pack requirements of electronic commerce.

The company also plans to experiment with separate sites for consumers and commercial contractors, each with different products and features.

"This will be a testing year for us. We're going to experiment with products and approaches," Cohen said. ■

JUST THE FACTS:

■ 10% to 10% of North American hardware retailers have Web sites.

■ About a dozen small hardware retailers sell products online.

SOURCE: NATIONAL HW & FS ASSN. REPORT, FEBRUARY 1996. 1,800,000 U.S. HOMEOWNERS VISIT HW & FS WEBSITES.

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AOL to Lay Off 9% in Netscape Merger, Launch New Units

BY STEWART DECK

America Online Inc.'s acquisition of Netscape Communications Corp. will result in both

staff cuts of 9% — or 700 to 1,000 workers, divided roughly equally between the two companies — and new company

divisions, America Online (AOL) said last week as it began to detail its merger plans.

Analysts said the size of the

cuts was expected but that product-line details will still need to be ironed out.

A spokesman said America

Online will go forward with new development for Netscape's Communicator suite and its Navigator Web browser but acknowledged that Microsoft Corp.'s Internet Explorer will remain the default browser for AOL users.

The combined company will be restructured into four groups: Interactive Services for online service, Interactive Properties for special projects, Netscape Enterprise for electronic commerce and AOL International for international operations.

The Enterprise group will also work with Sun Microsystems Inc. on electronic commerce, in an alliance announced last fall.

As many as 1,000 remaining Netscape workers are slated to join this new team, but Sun spokesman David Harrah said that Sun doesn't have "a formal plan" to rehire laid-off Netscape workers.

Cuts Expected

Chris Jennerwein, who uses Netscape Application Server in his position as vice president of technology and operations at Knight-Ridder Inc.'s New Media division in San Jose, Calif., said expected staff consolidations aren't a concern.

"We're interested in watching how the [Netscape] server line continues to develop," Jennerwein said. "The fact that Netscape, Sun and AOL will be working together on the enterprise level [gives] us a lot of comfort."

Although the layoffs were expected, there are other questions. "We still haven't heard about how AOL will deal with overlapping product families or how Sun will deal with other [Internet service providers] when it's now in bed with the largest [Internet provider] around," said David Alschuler, an analyst at Aberdeen Group Inc. in Boston.

Dave Kelly, an analyst at Hurwitz Group Inc. in Framingham, Mass., said one interesting thing to watch is how Sun balances developments of its NetDynamics electronic-commerce applications server with Netscape's Application Server offerings in the alliance.

"NetDynamics has been the definition of Sun's software strategy. Changing it now would be a serious marketing blunder," he said. ■

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UNITING THE WEB
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ORACLE READIES SUPPLY-CHAIN APPS

Will introduce ERP planning/scheduling software at user show

BY CHRIS STEWART

ORACLE CORP. IS following ERP rival SAP AG into the supply-chain planning side of the application business.

At its independent application user group's spring conference in San Diego next month, Oracle is expected to announce advanced planning and scheduling software that will work with its family of enterprise resource planning (ERP) applications.

The new package will provide a lower-cost subset of the production-scheduling and inventory-planning capabilities that manufacturers can get from supply-chain vendors such as I2 Technologies Inc. and Manugistics Group Inc., Oracle officials said.

That puts Oracle in the company of SAP, which released a supply-chain planning tool for its R/3 applications suite earlier this year.

Steven Cole, an analyst at Forrester Research Inc. in Cambridge, Mass., said Oracle is being "pretty vague" about the level of functionality that will be included when the new tool ships around midyear.

But at least initially, Cole said, the Oracle and SAP products are most likely to be bought by users "who don't have super-sophisticated needs" and want to avoid paying the \$1

million-plus bill that I2 and Manugistics usually charge.

Rockford Corp., a Tempe, Ariz., maker of amplifiers and other audio equipment, may fit that description.

David Richards, vice president of information technology at Rockford, said the company wants to augment its Oracle ERP system with better production-scheduling software that could help reduce inventory costs and improve the company's ability to react to changes in sales forecasts.

The company is mulling an I2 installation later this year. But Oracle's planning tool may be enough to do the job without forcing Rockford to

bring in another vendor, Richards said. "I don't think we necessarily need a Rolls Royce to control our environment," he said.

Oracle wouldn't say what it will charge for the planning software, which will support discrete, process and other forms of manufacturing. ■

MORE ONLINE

For Oracle resources such as books, user groups, meeting info, publications, white papers and Web sites, visit our Web site: www.computerworld.com/news

Novell's Schmidt: Directory Key for NetWare

Digitalme technology, NDS highlight talk

BY SHARON GARDIN
SALT LAKE CITY

Eric Schmidt is hailed as Novell Inc.'s savior, leading a comeback from two years of decreasing revenue and lagging customer confidence. Users gave the Novell chairman and CEO a standing ovation at the company's annual BrainShare conference last week.

In an interview with *Computerworld*, Schmidt said the network directory is key to his company's future and spoke about NetWare's plans and a new authentication technology called Digitalme.

Q: When can companies make their enterprise with one directory?

A: I would assert that they're

doing that today. Companies manage their LANs with a directory and use it for user authentication. Then they realized they could manage user identities and extend that func-



NOVELL CEO ERIC SCHMIDT talks about the importance of NDS and how it fits into corporate strategy

tion. ... Businesses could be managing everything [from applications to business logic to switches and routers] with NDS [Novell Directory Services] V8 this year.

Q: With Novell focusing so heavily on NDS, will you begin to downplay NetWare?

A: Absolutely not. We're invested big-time in NetWare. NetWare is a big part of our vision. NDS runs on multiple platforms. To be successful, we'll need to get NDS in to the non-NetWare base.

There's no doubt about that, but NDS runs very well on NetWare.

Q: With Digitalme still in design, how do you see businesses using it?
A: I don't think we know yet. ... I'd like to be able to plug in someone where else and have all my authentication and applications restored. ... It's architected around the individual and how the individual sees their information. It could be different for everyone. This is an interesting launch point for different kinds of partnerships.

Q: How will you secure Digitalme?
A: For most people, [it] will be a password. You'll need to be careful not to give [out] your password, like you wouldn't give people your wallet. ■

MORE THIS ISSUE

Digitalme may aid users in charge of equipping information. See page 16.

Users Cheer Novell's Vision For Directory Services

Hundreds of NDS support applications expected by summer

BY SHARON GARDIN

Users are encouraged that Novell Inc.'s vision of a corporate enterprise managed by its Novell Directory Services (NDS) could become a reality, with Novell and other vendors working on a slew of directory-based applications.

NDS 8.0, announced three

weeks ago, is the basis of Novell's enterprise vision [CW, March 8]. But it will take directory-based applications that act as electronic plumbing connecting the different parts of the enterprise to the directory to make that vision a reality. Several hundred of those applications are slated to hit the market by late spring or early summer, a Novell spokesman said.

"Third-party acceptance is critical to my success with this," said Tim Talbot, vice president of PHH Vehicle

Management Services Corp. in Hunt Valley, Md. "We're looking at getting the directory all the way down to the desktops, user privileges, routers. With these applications, we could almost cut our administrative costs in half."

Robert Krackec, network administrator at West Palm Beach, Fla.-based Intracoastal Health Systems Corp., said that with applications on the way, he has more faith this could really happen for him.

Saving Time

Krackec said he plans to manage network objects, routers, firewalls and user identification with NDS 8.0. "If I could get everything down to a few buttons, it would save me management time, time learn-

ing each interface, how to use each tool and setting it up and taking care of it," he said.

According to Novell, directory-based applications in the pipeline include ones for routers and switches, Lotus Development Corp.'s Notes, Microsoft Corp.'s Exchange, databases, single sign-on, firewalls, supply chains and public-key infrastructure. Vendors include Lucent Technologies Inc., Cisco Systems Inc., Cabletron Systems Inc., Oracle Corp., NetVision Inc., Oblix Inc. and NetPro Computing Inc.

"This will help a lot," said Todd Chipman, an analyst at Giga Information Group Inc. in Boston. NDS 8.0 for NetWare is slated to ship in May, and versions for Windows NT and

Unix are expected this summer. Versions for Linux and mainframes are in the works. ■

JUST THE FACTS

NDS Apps

Novell said there are hundreds of directory-based applications in the works. What they will focus on:

- Routers
- Switches
- Lotus Notes
- Microsoft Exchange
- Databases
- Single sign-on capability
- Firewalls
- Supply chains
- Public-key infrastructure

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BRIEFS

Lotus Building Patch for Notes Security Bug

IBM's Lotus Development Corp. division last week said it's working on a patch to repair a bug in Versions 4.5 and 4.6 of its Notes messaging software that can expose encrypted e-mail messages.

Even if users encrypt messages, the system stores unencrypted copies on the Notes server. Until the fix is ready, users can manually check the Encrypt Saved Mail button in the Mail Preferences area every time they send an encrypted message, the company said.

Telco Service Makes ATM Local

AT&T has announced local Asynchronous Transfer Mode service in 41 major U.S. cities starting by September, putting its brand on similar service provided by its subsidiary, Teleport Communications Group.

With the service, a company can eliminate its need for a local carrier by setting up high-speed data communications between multiple LANs, analysts said.

Metz: IT Wastes \$76B on Vendors

Metz Group Inc. last week took a report claiming that up to \$76 billion of the \$80 billion it expects to be spent on information technology this year could be saved if users better managed their relationships with vendors.

The Stamford, Conn., consulting firm recommended that companies avoid spending more cheaply and streamline the process of buying commodity products.

Short Takes

About 20 vendors of application integration tools this week plan to form a council that's expected to develop models for gauging the software's business benefits, and users are being asked for the council. . . . MICROSOFT CORP. will offer added support for minor-critical applications running on UNIX/SPARC, Windows NT servers for \$5,000 per server per year.

MICROSOFT CLARIFIES Y2K COMPLIANCE PLANS

Issues product testing updates each month, will work with enterprise users one-on-one

BY KIM S. NASH
THROUGH Microsoft Corp.'s initial late response to the year 2000 glitch left users confused, the company in the past several months has been putting out consistent messages and clearer information on product compliance.

"Year 2000 at Microsoft now has a very, very high priority. [Related] decisions are not made unless they go through [Microsoft President Steve] Ballmer," said Kazim Isfahani, an analyst at Giga Information Group Inc. in Norwell, Mass.

He added that Microsoft has

gotten its year 2000 act together in the past six months.

The company said it has tested 2,000 products so far and updates its Web site the first week of each month with new information, including a schedule of when updated products are due to be tested (www.microsoft.com/technet/year2k/).

Of the 2,000 products so far tested, 60% are compliant, 33% are compliant with minor issues and 7% are not compliant, Microsoft said.

Even so, the company doesn't and hasn't recommended operating system upgrades as a way to outrun year 2000 bugs. Said Don Jones, year 2000 product manager at Microsoft, "Absolutely not," he said. Jones said enterprise users should contact Microsoft about any year 2000 concerns

and then work one-on-one to determine the best way to address them, given the user's unique environments.

Windows 2000 isn't yet rated, though beta-test versions of other products have been. One example: the e-mail package Outlook 2000, which is rated as compliant.

Microsoft's Web site notes whether patches exist for the products users are concerned about. There, they will find that Microsoft segments its product line into five categories of year 2000 compliance, such as "compliant" and "compliant with minor issues" — issues that won't result in the product crashing or losing data (see chart).

If a product is labeled "compliant with minor issues," it will stay that way. Microsoft has no plans to fix those prod-

Cracking the Code

Plain-English definitions of Microsoft's year 2000-compliant product categories, which can be found on its Web site:

Compliant: Product may need a patch but is otherwise compliant. Examples: Windows 95, Office Professional 97 & 98.

Compliant with Minor Issues: Meets most year 2000 requirements but has problems Microsoft says won't interfere with data or application functioning. Examples: Windows 95, Windows NT Server 4.0 with Service Pack 3.

Not Compliant: Has big year 2000 problems that, for example, may cause data loss or crashes. Examples: Office Professional 4.1, Site Server Express 2.0 (NT version).

Testing Yet to be Completed: Product will be tested but hasn't been yet. Examples: Internet Explorer 5.0 (Unix versions), Systems Management Server 2.0.

Will Not Test: Microsoft has no plans to test the product. Examples: Excel for OS/2, MS-DOS 2.0.

ucts to move them up to its highest level of year 2000 compliance, Jones said.

Still, users shouldn't rely on Microsoft's — or any vendor's — word alone to determine how to handle any year 2000 bugaboos because there's no industry-wide definition for compliance, Isfahani said.

Also crucial for users is understanding how a given application handles dates: there are no standards there, either.

How important a given year 2000 bug is depends on how users have implemented the product, Isfahani said.

For example, in Version 4.2 of Microsoft's Office suite, the Access database and PowerPoint presentation software have problems, but the Excel spreadsheet and Word word processor don't, he said.

"If Access and PowerPoint don't matter to your application, then you're OK. If they do matter, then you have testing and patches to deal with," he said.

Microsoft hasn't always been as clear in stating its plans. For example, Jason Marusow, who led the company's year 2000 strategy until nine months ago, told a group of securities industry executives in January 1998 that all of Microsoft's core products were compliant, including Windows 95 and Windows NT [CW, Jan. 26, 1998].

At the time, users and the rest of the industry understood that to mean that the Windows 95 operating system, for example, was fully compliant — that it would have no problems parsing dates after 1999.

But last week, Jones confirmed that Windows 95 will remain "compliant with minor issues." Windows 95's telephone auto-dialer, for example, won't log dates correctly. Also, the electronic-commerce wallet feature in the Internet Explorer browser that comes with Windows 95 won't accept credit-card expiration dates ending in 00, Jones said.

"Those issues are exceedingly minor, and the vast majority of our users would never see the bugs anyway," he said. ■

MORE THIS ISSUE

Acting on Microsoft's advice, services giant Electronic Data Systems Corp. launches a massive database upgrade. See page 1.

Y2K Testing Limits

Microsoft doesn't plan to test all hundreds of its products. Windows NT Server, for example, comes in 64,000 possible forms, when you count service packs, patches, the various hardware platforms it can run on and other variables. Said Don Jones, head of year 2000 strategy at Microsoft, "We can't do that," Jones said.

Microsoft still has plans to do so-called integration testing, where it would test to see if any new year 2000 problems crop up when certain of its products are used together. The combinations are "unpredictable [and] very complicated," Jones said.

However, Microsoft often analyzes software designed to scan user systems to identify which Microsoft products have problems. Users can then decide whether to ignore them, download patches, build workarounds or upgrade.

A 400-member fringe team is also available at no cost to help enterprise users figure out how to address year 2000 glitches in Microsoft products.

—Alan S. Abel



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NOVELL VIRTUAL WALLET RAISES SECURITY ISSUES

Technology designed for e-commerce would hold personal data

BY SHARON BAUM
AND ANN HARRISON
SALT LAKE CITY

CORPORATE users and industry observers are keeping a wary eye on Novell Inc.'s latest brainstrom — a virtual wallet designed to help Internet users centralize their identity information on the Web.

Although Novell spokesmen said the company's aim is to ease electronic commerce and internal corporate communications, some observers worried about making so much critical, personal information available in one place.

"That's just frightening," said Robert Kracsek, network

administrator at West Palm Beach, Fla.-based Intracostal Health Systems Corp., which owns two hospitals. "If somebody could crack Digitalme, then all your information is out there. From a technical standpoint, it's cool. But from a business standpoint, it's scary."

Novell announced Digitalme at its annual Brainstorm user conference here last week. The technology, which is still in the design stage and doesn't have a beta or ship date, would provide a single resting place for a user's personal information. That data, related to electronic commerce for instance, could include a user's name, address, credit-card number, banking information and Social Security

JUST THE FACTS

In the Works

Novell's Digitalme technology

is being designed to handle information

about users of the Internet

is described as a virtual wallet

is being designed with Citigroup's help

Has no beta or ship date yet

Will be connected to MSN

ty number. A Digitalme for corporate use might contain a user's name, phone and pager numbers and information on 401(k) plans, insurance and benefits.

Chris Stone, Novell's senior vice president of strategy and corporate development, said people could have different Digitalme cards for different purposes. "There are 30 versions of me on the Internet today," Stone said. "There are different passwords for different sites, different profiles and different access. I want to get control of that information."

Spokesmen for Novell, which is working on the project with Citigroup, said Novell is putting out the idea for Digitalme in the hope of receiving comments and ideas. The company also hopes to bring credit-card companies and major online retailers into the loop.

Not Any Time Soon

Industry watchers said any kind of real adoption would require wide-scale acceptance and standardization among banks, online retailers and electronic shoppers. In short, Digitalme is probably years away, analysts said.

Some industry watchers were worried that Digitalme will cause users to lose control of their information.

David Banister, a policy director at the Electronic Privacy Information Center, a Washington-based privacy advocacy group, noted that studies show that when Web sites ask consumers to enter personal data,

they often protect their privacy by offering false information. "We are skeptical of a lot of these technologies because they are designed more to facilitate information sharing so that users won't have the opportunity to enter random information," he said.

Chris Christiansen, an analyst at International Data Corp. in Framingham, Mass., said he's concerned that the availability of so much critical personal and financial information in one place will be irresistible for cyberthieves.

"It's one thing for someone to steal credit-card numbers when you do a transaction. Those chances are negligible," Christiansen said. "But if it's in some repository with hundreds of thousands of numbers, the chances are even greater because thieves go where the money is."

"We're very aware of privacy issues," said Carrie Prewitt, a systems engineer at Novell, who noted that the company is looking to draw attention to Novell Directory Services by

Digitalme 101

Novell's Digitalme virtual wallet is a software application — not an actual card like a smart card — that works off Novell Directory Services. Novell engineers haven't fully worked out the technology, so they'll still not know when the software will be — on a server, client or browser.

The initial idea is that the user will be in charge of inputting the information through a registration-style form. That will let IT administrators "involve them, leaving them up for other work."

Smart cards, which are plastic cards that mimic the appearance of credit cards, are similar in that they are built to aid online user authentication and online transactions. They, too, are searching for steady adoption and are expected to become more popular in the next few years as PCs and other machines are built to accept them. — Sharon Bauck

showing off applications — like Digitalme — that could be built on top of it. She said much still needs to be thought through on Digitalme, including security concerns. "People can use passwords or encryption," Prewitt said. "Anything's possible at this point." ■

Banks Confident About Y2K, Worried About Customers

Mellon to open New Year's to calm fears

BY STACY COLLETT

Feeling confident about its year 2000 preparedness, the banking industry is now trying to calm customer fears about year 2000 chaos.

To prove the readiness of its systems, Mellon Bank Corp. in Pittsburgh last week announced that banks in key locations will be open for business on New Year's Day.

Behind the public relations move, Mellon spokesman Ron Gruendl said is the bank's investment of three years and \$62 million so far in year 2000 preparations.

"It's the first large-scale bank we've heard of [opening on New Year's Day], and we definitely applied it," said Janet Eisenstat, a spokeswoman for the American Bankers Association in Washington.

The trade group's handbook of tips for calming year 2000

fears includes suggestions such as holding New Year's Eve parties in bank lobbies and inviting customers to watch the bank vault open at midnight.

Statewide Savings Bank in Jersey City, N.J., is using "mystery shoppers" to make anonymous year 2000 inquiries to employees to see how they respond.

The mystery shoppers ask questions such as "What is Y2K?" and "How prepared is the bank?" If employees answer three questions correctly, they receive a \$25 bonus.

Meanwhile, Donald Mendonoth, president of Community First Bankshares in Fargo, N.D., has plastered "Y2K OK" stickers on everything from computer terminals to escalators at the bank.

The stickers show customers what's been tested as year 2000-compliant. ■

D.C. Notes: Y2K Liability, Nuke Issues

BY THATCHER THORDEAU
WASHINGTON

■ A bill limiting liability for year 2000 problems is heading far full vote by the Senate after winning 10-7 approval last week by the U.S. Senate Judiciary Committee.

The key provision of the Year 2000 Fairness and Responsibility Act is a 90-day "cooling off" period before litigation can begin. The hope is that both sides will resolve their dispute during the wait.

The bill limits personal liability of corporate officers and directors to \$100,000 and limits punitive damages to \$250,000. Sen. Orrin Hatch (R-Utah) and Dianne Feinstein (D-Cal.) sponsored the bill.

■ The U.S. Senate Special Committee on the Year 2000 Problem intends to hold hearings on Russian nuclear power plants and

weapons systems. The committee, in a letter to Vice President Al Gore, said 14 Chernobyl-style, Soviet-designed nuclear power plants "are at threatened by Y2K failures."

■ At a conference in Boston last week, former U.S. Speaker of the House Newt Gingrich called for a five-year extension of the three-year federal prohibition against Internet lawsuits.

Gingrich said governments should resist the impulse to import Net lawsuits until electronic commerce is 12% to 15% of a nation's gross national product.

He also urged the U.S. federal government to study to prevent a hedgehog of local and national tax policies.

Rebecca Sykes of the IDC News Service in Boston contributed to this report.

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Password Vulnerability Cited As Cracker Hacks eBay Site

BY ANN HARRISON

Officials at eBay Inc. have confirmed reports that a cracker twice attacked the online auc-

tion company's Web site earlier this month.

According to Brian Martin, a computer security consultant

who witnessed the second attack, the San Jose, Calif.-based company was hacked March 13 and 17 by a 22-year-old college

student who said he guessed a password on an administrative account, giving him access to the company's network.

"Unfortunately, it's usually that easy," said Dominique Brezinski, a senior network security professional at Secure Computing Corp., a San Jose security consulting firm.

Brezinski said the incidents should demonstrate to companies the need to avoid using simple user names and fixed passwords for remote-access authentication and to protect sensitive machines from remote Internet access. "They should use one-time-password systems in which each connection should require relatively complex passwords that change each time," he said.

Each connection should require relatively complex passwords.

**DOMINIQUE BREZINSKI,
SECURE COMPUTING CORP.**

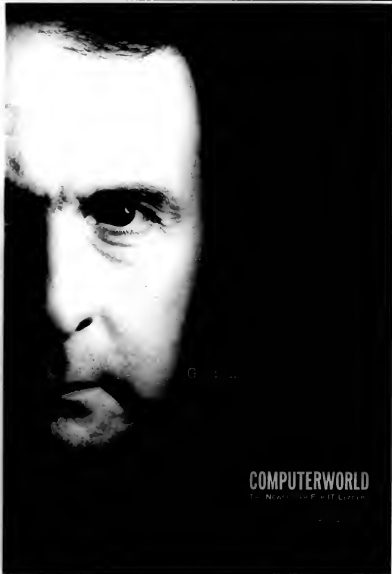
The cracker, who goes by the name MagicFX, told *Forbes* magazine that he still has root access to eBay servers, which gives him the ability to fake ads, change prices, divert traffic to other sites or take down the Web site itself and its business systems.

Kevin Pursglove, senior director of communications at eBay, said he couldn't comment on details of the attack and said law enforcement officials are investigating.

Once inside eBay's network, MagicFX used a technique called "local root buffer overflow," which bombards a software program with strings of text longer than the program's buffer can hold. That changes the program's memory structure and allows the cracker to gain administrator privileges.

MagicFX said he accessed administrative servers running the operating systems FreeBSD — a public domain Unix distribution — and Sun Microsystems Inc.'s Solaris.

The cracker modified the system's software to intercept passwords, log-in names and even keystrokes that were stored in a hidden file. ■



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BRIEFS

IBM Regains Database Lead

IBM has overtaken Oracle Corp. to regain its lead in the database software market, according to preliminary research from Dataquest Inc. in San Jose, Calif. System 390 and AS/400 system sales, as well as DB2 database sales for Unix and Windows NT platforms, accounted for most of IBM's growth. Last year, IBM's worldwide share of new license revenues reached 32.3%, up from 28.9% in 1997; Oracle's share dropped from 29.4% to 25.3%.

IBM PC Business Loses \$392 Million

IBM's Personal Systems division lost \$392 million last year, according to the company's annual report released last week, reducing total software profits— which account for more than 40% of IBM's total profits— from 35.9% in 1997 to 31.0% in 1998. IBM said lower margins on PCs were the major reason for the loss. Overall, IBM had a profit of \$30.9 billion on \$61.7 billion in sales, a profit rate of 57.8%.

Comcast to Acquire MediaOne

In a deal that would bring together the third- and fourth-largest cable providers in the U.S., to create a broadband delivery giant, Comcast Corp. in Philadelphia last week said it will acquire MediaOne Group Inc. in Englewood, Colo., in a stock swap valued at \$60 billion.

Short Takes

Former IBM CORPORATION AMER- CAS Chief Financial Officer James McNulty is now CFO at troubled enterprises resources planning software vendor BSAW CO. ... SAS INSTITUTE INC., a vendor of data warehousing and decision support technologies, said its 1998 revenues increased by 10% over 1997, to \$614 million. ... NEWLETT-PACKARD CO. subsidiary VERIFONE INC. has created a worldwide service organization to help businesses set up electronic payments on Web sites.

MICROSOFT PATENTS COULD BLOCK OTHER COMPANIES' USE

Licensing, royalty concerns may affect use of e-commerce options

BY KIM S. HARRIS

THINKING ABOUT adding features to your online-commerce site to allow buyers to use untraceable electronic money? How about letting visitors conduct secure, encrypted transactions at your Web site?

Be careful, Microsoft Corp. now owns patent rights to technologies just like those — and stepping on them could cost you licensing or royalty fees. Even worse, Microsoft could sue for infringement.

Other big vendors, including IBM and Intel Corp., have obtained Internet patents recently, as well. For example, Intel won a patent last month for a browser cache users can more easily control to automatically save and delete documents.

But Microsoft's ownership of various electronic-commerce patent rights strikes a special fear. Banks, airlines and media companies have long expressed concern that Microsoft could use its alleged monopoly power in operating systems to "take over" the Internet (CW, June 1).

Many of the patents recently awarded Microsoft were first applied for three or four years ago (see chart). The technolo-

gies have yet to appear in any Microsoft products. A spokesman said that like other vendors, Microsoft continuously does research and development in areas that may never make the company any money. It filed for rights to a method for untraceable cash, for instance, in August 1995 and won the patent last June.

Tom Burt, head of litigation at Microsoft, maintained that the company has no plans to seek out and sue those who have allegedly infringed. "What we're trying to develop is a portfolio of patents that protect our inventions," Burt said. "Our principal focus is defensive."

That is, some companies patent technologies with the idea of trading licenses for them with other companies whose patented technologies they want to use.

It's a negotiating chip and a well-established practice in the semiconductor industry, said Ron Laurie, a patent lawyer at Skadden Arps Slate Meagher & Flom LLP in Palo Alto, Calif.

Indeed, Intel's recent antitrust run-in with the U.S. Federal Trade Commission stemmed, in part, from Intel's unexpected refusal to cross-

license patented technology with Intergraph Corp. in Huntsville, Ala. And in 1997, Apple Computer Inc. and Microsoft used cross-licensing to settle a long-running dispute.

"It's a 'We're not going to go after you, but you have to agree to not go after us' approach," Laurie said.

But in the software industry, the idea of defensive patents isn't widespread; some people doubt whether Microsoft meant what it said. "If you believe that one, you'll believe anything," said Robert Koch, an intellectual property lawyer

at Fulbright and Jaworski LLP in Washington.

Skeptics say there are other ways to take credit for inventions without getting a full-fledged patent for 17 to 20 years of exclusive rights. Investors can simply publish the technology specs. This establishes a record of prior art, which blocks latercomers from getting a patent on the same or similar inventions.

Microsoft also could have applied for a Defensive Document Registration at the U.S. Patent and Trademark Office. Unlike a patent, such a registration doesn't bestow exclusive rights that prevent others from using, selling or otherwise offering the technology. ■

Some Recent Microsoft Patents

TECHNOLOGY	DATE OF PATENT	NUMBER
Computerized purchasing system and method for mediating purchase transactions over an interactive network	March 2	5,872,141
System for enabling information marketplace	Feb. 16	5,872,850
Interactive entertainment network system and method for customizing operation thereof according to viewer preferences	Jan. 19	5,861,806
System and method for secure electronic-commerce transactions	Aug. 4, 1998	5,790,677

SOURCE: U.S. PATENT AND TRADEMARK OFFICE ARCHIVES

IBM, EMC Deal Will Tighten Storage Links

Better clustering for mainframe users seen

BY NANCY DILLON

Two once-bitter storage rivals found some common ground last week. IBM and EMC Corp. announced a five-year, strategic technology and business alliance valued at \$3 billion.

As part of the agreement, Hopkinton, Mass.-based EMC will continue to buy IBM disk drives for incorporation into EMC Symmetrix storage arrays. The alliance also pro-

vides for some patent cross-licensing between the two.

Last week's news came on the heels of another reseller win for IBM. On March 4, IBM and Dell Computer Corp. announced a \$16 billion technology pact in which Dell agreed to purchase storage, microelectronics, networking and display technology from IBM for use in Dell systems.

The EMC deal "isn't a block-

buster deal like Dell with IBM," said David Hill, an analyst at Aberdeen Group Inc. in Boston. "But it's quietly important as an indication of where the market is moving — toward competition in some areas and 'cooperation' in others." Hill said the partnership isn't a concession on either part because the real value of a storage subsystem isn't in the disk drives but in less-concrete features such as software, services and microcode.

"It looks like there will be a lot of collaboration on the

S/390 platform, and this is what mainframe users have been asking for," said Anders Lodgren, an analyst at Giga Information Group Inc. in Norwell, Mass. Currently, data protection via IBM mainframe clustering and via EMC data-mirroring software is separate, but the collaboration could link them for higher reliability, analysts said.

Analysts said the news could be a boon to users because it alluded to tighter integration of IBM's mainframe clustering technology and EMC's Symmetrix Remote Data Facility software, which sends mirror copies of data over long-distance connections. ■



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- Captain James Lovell, Commander of the Apollo 13 and it's ill-fated mission to the moon
- Peter Levine, President and CEO of Decision Drivers, a GartnerGroup Company



- Michael Peterson, President, Strategic Research Corporation
- William J. Reedy, Vice President of Transaction Systems, Marketing, IBM Software Solutions Division
- Tom Rossmale, Vice President of S/390 Software Development, IBM

Managing disparate systems and business-critical applications while meeting service level objectives is no trivial task. BBUG '99 can help.

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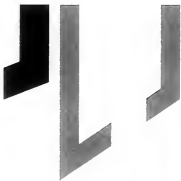
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Y2K LOCKDOWNS TO HIT ERP, PC VENDORS HARD

Slowdowns in ERP sales, PC purchases to translate into lean 1999 for consultants

BY JULIA KING

Yet 2000-related computing lockdowns are already taking a bite out of ERP software sales, adding high priced consultants who were booked solid just nine months ago.

But wait. There's more: By year's end, lockdowns are also likely to send PC prices through the floor, as Dell Computer Corp., Compaq Computer Corp. and other manufacturers scramble to unload machines that are now sitting off production lines running full-

this year, when vendors start to aggressively cut prices and try to cannibalize one another's markets. "Late in the year is when they'll start reporting things turning bad," he said.

This is a great news for users. If you are thinking of buying PCs, wait until the second half of 1999 or early 2000, Howe said.

Echoes Survey

That prediction corresponds with the results of a Computerworld survey last month of 241 information technology managers at companies with more than 500 employees. It found that 38% of companies are planning to extend their lockdowns to PCs and workstations, with the bulk of companies initiating their freezes before July.

The impact on the enterprise resource planning (ERP) front has been more immediate. A deployment slowdown precipitated by corporate year 2000 freezes appears to already have hit ERP vendors, who have issued their first round of bad-news bulletins.

SAP AG, PeopleSoft Inc. and IBM Co. all reported lower-than-expected applications sales in last year's fourth quarter. SAP and PeopleSoft said their revenue growth will likely moderate from 41% and 10%, respectively, in 1998 to about 25% each this year.

Financial analysts said most of the increase is expected to come from services, not new sales.

Late last week, SAP said its first-quarter, pretax profits are expected to "fall significantly short" of the total from a year ago because of the decreased demand for software caused by the year 2000 effect.

J.D. Edwards & Co. and Oracle Corp. also reported lower-than-expected sales in their fiscal quarters that ended in January and February, respectively.

The vendors attributed the sales fall-off to a combination of the weak Asian economy and users postponing new software purchases to focus on more pressing year 2000 projects. That slump will likely continue throughout 1999. Credit Suisse First Boston Corp., for example, expects SAP's software license sales to remain flat.

Industry Directors Inc., a Newburyport, Mass., manufacturing and supply chain consulting firm is pegging revenue growth for all ERP vendors at 6% in 1999 and 1% in 2000 — compared with 32% annually in the past three years.

"There are a lot of [ERP] consultants sitting around waiting for their next assignment," said David Pyke, an associate professor at Dartmouth College's Amos Tuck School of Business in Hanover, N.H.

Continued from page 1

Freeze

own departmental money for pet projects completed by outside systems integrators.

Although industry titans such as Merrill Lynch & Co., Sears, Roebuck and Co., Fidelity Investments, SmithKline Beecham and Consolidated Edison Company of New York all are planning to freeze significant chunks of IT installations later this year, most companies aren't planning a total lockdown.

For example, just 20% of 241 IT executives surveyed in an exclusive Computerworld poll said they plan to cut hardware, software and services purchases during the latter part of 1999.

Of the executives surveyed, 40% said they expected year 2000 freezes to reduce their total IT spending by 1% to 20%. The good news for IT vendors

The slowdown is likely to result in a significant drop in the \$30 billion U.S. ERP consulting market — from 30% growth in 1998 to about 10% this year, according to Tim Bourgeois, an analyst at Kennedy Information LLC in Fitzwilliam, N.H.

ERP Comeback

Pyke, who closely follows the big consultancies, said he expects ERP demand to eventually come back strong, but that won't happen until next March at the earliest, as users wait "until the smoke clears" from the year 2000 date rollover, he said.

Hydro Agr North America Inc., a fertilizer maker in Tampa, Fla., put additional installations of SAP's R/3 system on hold in January after wrapping up rollouts at three divisions.

The company doesn't plan to even start evaluating more R/3

rollouts until mid-2000, said Andy Hafer, Hydro Agr's director of information management.

"We think we've uncovered everything on the year 2000, but you just never know," Hafer said. To be safe, the company is now focusing only on smaller IT projects "that can be tabled if we find a big Y2K bug," he said.

Bristol-Myers Squibb Co. is another big R/3 user that's holding tight for now. Though an R/3 revamp that SAP plans to ship later this year looks "a lot more user-friendly" than the release that Bristol-Myers runs now, the company doesn't expect to upgrade until next spring. That's because of a year 2000-related moratorium on IT investments, according to Frank Ragany, director of an accounting team at the New York-based maker of medicines and other health care products. ■

Computerworld senior editors Craig Stedman and Jaskumar Vijayan and senior writer Stewart Deck contributed to this report.

Stocking Up

How did the year 2000 affect your spending last year?



tilt. By then, analysts said, the biggest corporations will have bought all of the hardware they need to be year 2000-ready. By Labor Day, the keys will have been turned on virtually all planned lockdowns.

Also, few companies seem to be stockpiling PCs or other products, as some analysts had predicted. Less than 25% of companies surveyed by Computerworld had any stockpiling plans.

"The infrastructure freezes will stop the mad growth in the [PC] market," predicted Carl Howe, an analyst at Forrester Research Inc. in Cambridge, Mass. That will kick in later

is that 80% of the spending being withheld will go to other IT projects.

Gartner Group Inc. agrees. It found that only 5% of all companies worldwide plan to impose a complete systems freeze. That jibes with what other researchers are finding.

More common are companies that are planning partial or targeted freezes.

Edward Yardeni, chief economist at Deutsche Bank Securities in New York, said he believes that all nonessential applications that may draw resources away from year 2000 testing "are going to be shut out."

Gartner agrees. It found that 50% to 60% of all companies worldwide plan to isolate a "small subset of their [core] systems" from receiving upgrades or enhancements, said Lou Maruccia, year 2000 research director at the Stamford, Conn.-based research firm.

Continued on next page

Shut Off

Percentage of companies that will lock down for year 2000 in the following areas:

- 63% Application development
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- 48% PCs or workstations
- 46% ERP software
- 46% Mainframe software
- 40% Peripherals
- 35% Consulting, outsourcing and systems integration services

Source: Survey of 487 IT managers at companies with 500 or more employees, multiple responses allowed.
STATISTIC SOURCE: COMPTON/STATISTICS



KEYSPAN'S RISK
SEBEL: "The intent is not to slow down our forward progress."

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Continued from page 1

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JULY FRANKENBERG WAGE



KEYSPART'S RISK
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Continued from previous page

Gartner Group figures are based on a quarterly survey of 15,000 companies in 87 countries.

Merrill Lynch, for example, "will be very strict" about making any changes to its core trading and call-center systems, said John McKinley, chief technology officer at the New York-based brokerage. He added that he doesn't see "a significant change" in the firm's overall IT spending this year.

Even at companies that have imposed "hard" freezes, new IT projects are likely to slip through the cracks — especially those driven by savvy business-unit executives accustomed to getting what they ask for.

At companies in which CIOs are dictating a systems freeze, many business-unit executives "are saying 'Yeah, sure I will,'" Marcoccio said sarcastically.

"We'll have a court of appeals to consider" installing new systems that are aimed at providing a competitive advantage, McKinley acknowledged.

It's also true that many IT executives said new projects aimed at cutting costs or creating a competitive advantage will continue going forward because their organizations can't afford to sit still.

KeySpan Energy, a Brooklyn, N.Y.-based utility that faces the threat of industrywide deregulation, doesn't plan to defer major software purchases but may delay their installation until after the first quarter of 2000.

"The intent is not to slow down our forward progress," said Rick Siegel, year 2000 officer at the company. He pointed to KeySpan's plans to install a new PeopleSoft Inc. human resources and benefits package by year's end.

Nevertheless, analysts expect certain IT vendors to be hit hard by slowing sales. Particularly vulnerable are enterprise resource planning vendors such as SAP America Inc. and PC makers such as Compaq Computer Corp.

For starters, IT budgets are going down. Companies are planning to raise their IT spending by just 1% this year, compared with a 4% rise last year, according to a recent survey of 50 Global 2,000 companies by Forrester Research

Inc. in Cambridge, Mass.

Vendor executives remain cautious. "I don't know what kind of impact [a spending freeze] is going to have on revenues, but I'm telling our salespeople not to wait until the fourth quarter — close your deals in Q2," said James Goodnight, president of SAS Institute Inc., a Cary, N.C., data warehousing and software vendor.

Added the CIO of a small, Hartford, Conn.-based insurer who requested anonymity: "For the first time in years, our IBM sales rep is interested in us. I don't get much interest out of those guys unless they're not buying over at Aetna [Inc.] and Travelers [Corp]."

For its part, Travelers Property Casualty is planning a partial systems freeze in the fourth quarter of 1999, said Diana Beecher, senior vice president and CIO for the Hartford, Conn.-based insurer. While some "exceptions" will be permitted to upgrade or enhance systems on a case-by-case basis, Travelers' "change control process will be more exclusive" than it normally is in the fourth quarter, Beecher said.

Joseph C. Lane, the president of IBM Credit Corp., the sales and leasing arm of IBM, said his unit hasn't experienced a negative revenue impact from customers who are planning to impose a systems lockdown.

Still, Lane admitted that "we're tracking customer purchasing and leasing plans on a weekly basis" out of concern over possible sales slowdowns resulting from year 2000 lockdowns.

"Life goes on," said John Panchery, vice president of systems at the Securities Industry Association in New York, whose members (primarily Wall Street brokerages) typically freeze new hardware and software installations for the last six weeks of the calendar year to help them balance the books. Panchery said he doesn't think year 2000 projects "will affect much [IT] purchasing — it's more about [following new systems to go] into production."

But systems freezes and even partial freezes mean different things to different people.

Burlington Northern Santa Fe Rail Corp. will continue building and in-

stalling custom, in-house software applications as part of a new asset utilization system. But starting in September, the Fort Worth, Texas-based railroad also will freeze all code on systems that exchange data with other railroads.

"We have an aggressive plan of work in 1999 to address pre-empt demand" that was created but not filled by the railroad's 1995 merger with Santa Fe Pacific Corp., said CIO Bruce Freeman. Currently, Freeman said, demand for new applications and other services continues to be four times larger than what the railroad's budget can handle.

At the other end of the lockdown spectrum is New York-based Guy Carpenter & Co., which completed all of its mainframe code remediation last year and is testing it this year. The \$450 million reinsurance company "has essentially already pulled the plug on [changes and enhancements] on the mainframe other than if there's a crisis," said CIO John Gropper. He said IT also

will continue developing new applications but will hold back on using them. "No project has deliverables from Sept. 1, 1999, to March 1, 2000. That means no installations and no deployments," he said.

Gropper said he expects the dual strategy will have little or no effect on hardware and software purchases, especially PCs, which the firm upgrades on a rolling basis every three years.

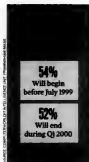
One federal IT chief is seeing it differently. "If we're not going to be implementing [from September 1999 to March 2000], buying probably isn't in our plans," said Kathy Adams, chairwoman of the Federal Chief

Information Officers' committee on year 2000 and the information systems chief for the Social Security Administration in Baltimore.

But to handle software changes required before September, federal agencies will "see a lot of [spending and installation] activity earlier," she said. ■



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IT'S OFFICIAL: MICROSOFT IS MAGNET FOR LAWSUITS

Plaintiffs say battling the software giant takes its toll on personal life and business

BY KIM B. NASH

"IT'S REALLY the equivalent of working a second job," said Keith Blackwell, CEO of tiny Bristol Technology Inc. He spends 40 to 50 hours per week tending to his lawsuit against his employer, Microsoft Corp., and had to tap another executive as president to take over daily operations of the company.

Microsoft "told us they have over 70 attorneys working on our case," Blackwell sighed. "We barely have that many employees."

Blackwell isn't the only one suing Microsoft, the industry's newest lawsuit magnet.

Companies and individuals have filed 42 federal cases against the vendor during the past 18 months — more than against fellow software giants IBM, Oracle Corp. and even that well-known legal target Computer Associates International Inc. (see chart). In fact, Microsoft is fighting more le-

gal claims than at any time in its 24-year history.

Some litigants are piling private lawsuits onto the federal antitrust case; others are entrepreneurs who believe Microsoft has stolen their technology. The suits range from patent and copyright infringement, contract disputes and product liability to the claim by a federal prisoner in West Virginia that Microsoft Chairman and CEO Bill Gates violated his civil rights.

Microsoft has denied all charges.

There's no doubt the U.S. Department of Justice's antitrust case has sparked some of the litigation. For example, Gravity Inc., a document management vendor in Fort Worth, Texas, filed a class-action antitrust suit against Microsoft and three PC makers last month — in the same U.S. District Court in Washington and before the same judge as the Justice Department's case.

Microsoft also faces at least five other antitrust suits. Yet Tom Burt, head of Microsoft's litigation group, maintained that the onslaught has little to do with the very visible Justice Department case.

"What's really happening here is Microsoft has had a great deal of success, [which] tends to cause some people to file lawsuits in order to share in the success," said Burt, who reviews every case filed against the company.

As many plaintiffs are discovering, Microsoft is a tough cookie both in and out of court. In most cases, Microsoft, with its 120 in-house and at least 55 outside lawyers, has far more courtroom experience than its opponents.

Yet because Microsoft typically contests every little issue in every case — and faces so many cases — it could be stretched thin, said Mark Patterson, an associate law professor at Fordham University in New York.

"They can always hire more outside counsel," he said, "but it's a burden" to face so many cases at once.

Microsoft's internal legal team is hiring, but Burt declined to say how many lawyers he's looking for. The company's general and administrative costs jumped 41% last quarter to \$149 million, primarily because of increased legal work.

After the Justice Depart-

Legal Targets

Number of federal lawsuits filed against a sampling of large software vendors since October 1997

Vendor	Lawsuits
Microsoft Corp.	42
IBM	26
Computer Associates International Inc.	20
Oracle Corp.	6

* Doesn't include lawsuits filed in state or local courts

ment suit ends, Microsoft is due to face Blackwell's Bristol Technology in another antitrust trial scheduled for June 1. Bristol, a small tools vendor in Danbury, Conn., sued Microsoft last August, charging anticompetitive violations after Microsoft refused to re-up-

on a contract to provide Bristol with its Windows NT code.

Blackwell started the company with his wife and brother in 1991. Bristol is profitable, he said, and has hoarded "significant" cash reserves that now finance the suit. But the money won't last forever. "If we lose, it will wipe out years of cash balances. We [will] have to figure out how to move into new products and go on," Blackwell said.

The company has also lost potential customers because of the suit, he added. Most surprising, Blackwell said, is the personal toll the case has taken so far. For example, Microsoft lawyers deposed Blackwell on the September morning after he was up until 3 a.m. for the birth of his third child. Two weeks later, his wife, Bristol co-founder Jean Blackwell, had to bring the infant girl to her own deposition.

Mark Torretta, an independent software consultant in Windermere, Fla., is suing Microsoft for allegedly stonewalling on his patents for online real estate searching technology.

"I actually like Microsoft. But they infringe," the 37-year-old Torretta said. "If they really want to do [online real estate listings], they should take a license. That's the way the process works."

Torretta claimed that he tried twice, via letter, to coast

3 Years and Counting - For the Principle of It

Caldera struggles to keep the faith as it waits to take its shot at Microsoft

BY KIM B. NASH
CREW LEAH

Some observers say Linux vendor Caldera Inc. is foolish to pursue its July 1996 antitrust lawsuit against Microsoft Corp. Why spend years fighting a company 400 times your size over a washed-up technology like the DOS operating system?

Crazy, right?

Not to Bryan Sparks, Caldera's 37-year-old president and CEO. Nor to Ray Noorda, the billionaire founder of Novell Inc. and the longtime Microsoft nemesis who's quietly bankrolling the suit. In 1994,

Noorda put up the money to start Caldera, which was built on some sidelined Linux work originally started at Novell. Then, on July 23, 1996, Noorda sold Caldera the rights to DR-DOS. That same day, the lawsuit was filed in U.S. District Court in Salt Lake City.

Caldera claimed that Microsoft illegally used its market power to prevent rival DR-DOS from competing. For example, Microsoft intentionally spread fear among users and developers that DR-DOS wouldn't work with Windows 3.1, Caldera said. Microsoft also illegally tied MS-DOS to

Windows 95, Caldera alleged.

The litigation won't bankrupt Caldera, company officials maintained, because its lawyers are working for a contingency fee — a cut of whatever damages may be won — and Noorda is paying the



CALDERA CEO BRYAN SPARKS says someone has to stop the Microsoft monopoly. "Where will the innovation come from? I don't want to be a Windows programmer."

lawyers' incidental legal expenses. On the up side, Caldera has suggested that Microsoft pay \$1.6 billion to atone for its alleged sins.

Noorda declined to be interviewed for this story. However, Ralph Yarbo, president and

CEO of The Canopy Group, the Noorda family trust, said the Microsoft suit is a matter of principle for the 74-year-old Noorda.

"Caldera has an opportunity to create alternatives to Microsoft. We have attended some depositions and all of the hearings, so we are very involved," Yarbo said, speaking of himself and Noorda.

Sparks said he remains confident. "We have a good case, perhaps the best case" against Microsoft, he said, his blue eyes unblinking. "It would be sad if we wouldn't have acted on it — if, 10 years from now, Microsoft is three times the size of GE and we had a case that could have made some difference."

The case has chugged on for three years, with confronta-

tions both inside and outside the courthouse. For example, in a four-page press release last month, Microsoft outlined nine motions for summary judgment that essentially asked the judge to dismiss most of the case.

"Many of Caldera's allegations merely recycle claims that the [government] reviewed years ago and decided were groundless," the statement said, referring to federal investigations of Microsoft's business practices in the early 1990s that led to the vendor signing a consent decree. But Microsoft calling the government accusations "groundless" is revisionist history, Sparks fumed. "If that were so, they wouldn't have agreed to a consent decree," he said.

Yet Caldera can't fully respond to the press release without violating a protective order keeping most of the

Microsoft into licensing his technology, but the software giant didn't bite. A suit was his only recourse, he said.

Torretta's business model is to license his technology and, failing that, to sue companies that seem to infringe on his patent. Funding the Microsoft suit and others is no problem, he said. "The actual licensing price has all those costs incorporated into it," he explained.

His lawyer works on a contingency fee, which means he gets a percentage cut of the financial damages Microsoft must pay if he wins.

The Torretta approach isn't unusual, said Roo Laurie, a patent lawyer at Skadden Arps Slate Meagher & Flom LLP in Palo Alto, Calif. "You have a lawyer investing in his future by working for free for a few years to get 30% of some huge fee later on," Laurie said.

Contingency fees are also driving a state-level class-action suit filed in California last month, accusing Microsoft of abusing its monopoly power to force PC buyers to take its Windows operating system. Charles Lingo, a 62-year-old retired medical instrument repairman in San Jose, Calif., said he tried at least twice to get refunds on Windows 95. "I resent being forced to buy something I don't like and don't want. I finally got a chance to do something about it," Lingo said. And

he hired four law firms to help.

"Nobody's going to get rich other than possibly Microsoft's lawyers and the ones taking it on contingency," he said. "But it's principle."

Some plaintiffs said they believe their cause is right but are wary of Microsoft's might.

Mike Doyle, the founder of Eolas Technologies Inc., hired a public relations firm to issue

press releases announcing his patent infringement case against Microsoft last month.

Yet the Chicago-based software developer wouldn't discuss it much in an interview,

for fear of tipping off — and ticking off — his adversary.

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case's material secret from the public. "They tied my hands," Sparks said.

Microsoft is simply defending itself, a company spokesman said.

The lawsuit has taken a business toll on Caldera. Sparks said he wants to take the company public but received a disheartening response to a 1997 Wall Street road show. "It loomed large that this lawsuit was there," he said.

Instead, Sparks has looked on while other Linux vendors — archival Red Hat Software Inc. in particular — won millions of dollars in investments from high-powered players such as Intel Corp. and IBM. "Linux is hot, but Caldera isn't."

"We didn't necessarily need the money. The business is doing OK," Sparks said. "But as far as branding and momentum and relationships. ..."

Then his voice trailed off. ▀

MARYFRAN JOHNSON

Digital dossiers

I WAS CHECKING my luggage at the San Francisco airport one hectic morning when the clerk examining my ticket saw that I'd scrawled someone's phone number on the back of it. "You can't write on this! That's not allowed," she scolded. Feeling rather full of myself that day, I snapped back, "What are you going to do, make a note in my permanent record?"

The people behind me chuckled at this foolish display of defiance, no doubt relieved it wasn't *their* luggage in the hands of a now-irate airline employee.

That childhood specter of a permanent record lurking somewhere flashed through my mind again last week when Novell officials unveiled their plans for the "Digital Me" technology. This software would enable the creation of a kind of digital "identity vault" for storing all sorts of personal or business information online (see story in this week's news section). Once it ships later this year, it will be part of the first wave of new application types that leverage the power of network directories and standard Internet protocols, offering us capabilities we didn't even know we wanted.

The seductive appeal of creating your own "digital persona" — a kind of online wallet where you stash everything from insurance information to credit-card numbers — is the control you can supposedly exercise over



MARYFRAN JOHNSON is executive editor of Computerworld. Contact her at maryfran.johnson@computerworld.com

who sees what information. And control is a huge concept in these days of escalating privacy concerns.

Yet there's no question that technology like this can and will pull us another step closer to that invasive world of "electronic dossiers" that the privacy advocates get so spun up about. The hopeful aspect that I see with an online digital persona — as it becomes our permanent record of the future — is that we'll actually

know what's in there. If there's going to be a dossier on me (and I assume there are plenty already), I'd rather know about it than worry about it.

But I must admit that I shudder to think what my airline passenger behavior profile will say.

I'm still amazed that my luggage didn't end up in Nepal that day. ▀

JOHN GANTZ

Those surfing IT's next wave may not be like you

SURELY YOU'VE SEEN enough surfer-movie footage to know what it means to "shoot the curl." That's when you hunker down on your board and surf under the curling lip of the wave. The bigger the wave, the more adrenaline.

I don't care how Caspar Milquetoast-like you are. Soon you will be shooting the curl. Figuratively, anyway.

No, I'm not talking about the year 2000. That will come and go. I'm talking about what will happen after civilization as we know it doesn't crumble and planes don't fall out of the sky.

The wave, of course, is the explosion of users and devices on our networks — from a few hundred million this year to billions by 2003. It's the growth of the online business world embodied by a level of Internet commerce that is supposed to grow from \$50 billion in 1998 to \$1.3 trillion in 2003. Not only all your company's customers, but also your customers' customers. And their customers.

Unfortunately, if you're an IT professional, you may be trying to shoot the curl on something more akin to a pool toy than a Burton board.

The key problem you face is twofold:

■ There won't be enough competent professionals to go around (even after the Y2Kers get reassigned).

■ The job profile to be upwardly mobile in the online market doesn't look much like that of a traditional IT professional.

According to research conducted by my company, International Data Corp., attrition in the ranks and growth in demand will create openings in the U.S. for more than 400,000 IT professionals this year. Yet the supply is unlikely to hit 300,000.

This is nothing new. But what is new are the following two findings uncovered by my company's psychographic research on the people driving the new Web applications:

- They don't have IT titles.
- They don't have IT personalities.

IT and Internet executives are almost polar opposites: IT professionals ranked themselves as cautious, Internet executives as risk-takers. IT professionals were more pessimistic than optimistic; Internet executives defined optimists. IT



JOHN GANTZ is senior vice president at International Data Corp. in Framingham, Mass. Contact him at jgant@idc.com

Fleet Financial Group plans to buy BankBoston for \$16B



executives preferred tested methods and ideas; most Internet executives classified themselves as early adopters.

With luck, we're talking yin and yang — complementary traits that will help companies deal with life after the year 2000. Without luck, we're looking at the rapid diminishment of the IT profession back into the bowels of the organization, along with administrative services, PBX operations and facilities management.

For individuals in the IT profession, the writing is on the wall: You'll either need to have arcane skills for which companies will pay, no matter what your personality, or you'll need to assume the demeanor of a marketing professional and remake your persona.

If I were an IT manager or CIO, I'd begin to adjust my job descriptions and applicant-screening methods to crank up the dial on interpersonal skills and business training. ■

DAVID MOSCHELLA

Talk of high-tech 'bubble' economy is overheated

BY ANY OBJECTIVE CRITERIA, the Dow Jones industrial average is an odd way to track the overall performance of U.S. stocks. It consists of an arbitrary list of just 30 companies; it's not purely an "average"; some of the chosen companies aren't actually "industrial"; and its underlying calculations aren't even weighted by each company's market capitalization.



DAVID MOSCHELLA is an author, independent consultant and weekly columnist for Computerworld. Contact him at dmoschella@earthlink.net.

Why should anyone care if this meaningless number reaches 10,000?

And yet the Dow's 70-year heritage still makes it the simplest way to make sense of this wonderful bull run. Just think back a bit. As recently as the late 1980s, Japan's Nikkei stock average topped 30,000, while the Dow fell as low as 1,700. From those extremes, the Dow has

risen nearly sixfold and the Nikkei fallen by more than half, combining for an astounding twelvefold swing. For the first time since the 1920s, the Dow has tripled in a single decade.

That has led many commentators to suggest that the Japanese "bubble" economy of the late 1980s and the U.S. prosperity of today might have a great deal in common. However, too often, the word bubble is used sloppily, unintentionally mis-

representing what's actually going on. Bubble suggests something light, without foundation and easily burst, but stock prices are mostly grounded in what people really believe. Those beliefs are usually much more rational than many commentators seem to realize.

The Nikkei reached 30,000 because, in the late 1980s, investors expected Japanese companies to dominate much of the global economy, including such high-growth sectors as computers, semiconductors, telecommunications and finance. If that had happened, the Nikkei would surely have continued to rise. Bubbles of irrationality were, of course, also a significant part of the story, as demonstrated by Tokyo's truly astronomical land prices. But the underlying driver was economic dynamism.

However, by the early 1990s, it had become clear that the world had vastly overrated Japan's capabilities, and the Nikkei was lagging ever since. Thus, the real lesson wasn't that investors had irrationally bid up Japanese stocks, but that they had seriously miscalculated the outlook for Japanese companies and the Japanese economy. There's a huge difference between being irrational and simply being wrong.

Similar distinctions should be applied to today's U.S. prosperity. Current investor enthusi-

asm is ultimately grounded in the prevailing worldwide consensus that U.S. companies and the U.S. economy are destined to thrive in the rapidly changing, global, post-Cold War, high-tech economy of the early 21st century.

Once again, irrationalities have proved unavoidable. It's scary how many people seem to believe that business cycles have somehow been magically repealed and that — regardless of the contributions of telephony, radio, television, electricity, automobiles and airplanes — the Internet somehow changes everything. But as with Japan, the irrational subplots aren't nearly as compelling as the underlying global consensus.

Consequently, the real question isn't whether investors are rational or irrational, but whether our basic beliefs about our companies and our economy are accurate. If they are, stocks will fluctuate, but they won't collapse. If our thinking is as wrong about the U.S. today as it once was about Japan, then stocks will fall precipitously. I don't think it is.

But even if the future proves otherwise, it still wouldn't mean that today's prices are nothing but a bubble — it would mean that America's technology-driven competitiveness either didn't last or had proved illusory. You can't get much more rational than that. ■

READERS' LETTERS

Beware penny-wise, pound-foolish deals

I READ YOUR article "Paits to a Better Deal" [CW, Jan. 11] with both interest and dread.

I have a couple of thoughts: First, neither hardware nor large software packages are commodity items. A Sun server isn't the same as an SGI server, for example. You may save hundreds of thousands of dollars in the deal, but you may lose millions by choosing the wrong product.

Second, vendors aren't equally viable nor are they necessarily equally able to support and enhance their products. What if it cost you if the vendor goes out of business or can't support you successfully?

Third, be wary of a deal with a vendor in which you agree to be a reference site or act as a beta tester. Given that

you aren't paying the same amount as other customers, you may very well not be treated as well as the vendor's other customers.

You have to look at your purchases as strategic assets for your business. Don't be penny wise and pound foolish. **Bill Wenzel**
Director of internal systems
Wind Digital
San Ramon, Calif.
billw@wind.com

Respecting the whole team is key to growth

PAUL A. STRASSMAN'S article "Women take over" [CW, Feb. 4] was a joy to read and once again reveals Computerworld's ability to convey events from the perspective of those involved.

We are in a world in which the movement of voice, data and image is now the essential component that defines the

way we relate to one another as individuals, enterprises and societies.

A company's business philosophy should be based on team management, accessibility and respect for the entire team, including women.

Customers want increased levels of personalization. Learning how to manage this virtual conversation is the key to customer relationships that will drive increased loyalty and value exchange. The result is a business recognized for its superior products, services and the powerful relationships it has fostered.

Measuring and rewarding people for retaining and growing customers vs. acquiring new customers is a major cultural and economic shift for most companies.

Jimmy Castro
Member of the Greater Austin Chamber of Commerce
Austin, Texas
jimmycastro@hotmail.com

Beanie buzzword for baby accountants

I WAS READING the "Buzzwords" article [CW, Jan. 25] and came up with either a question or a statement (not sure which).

If a greenbean is a "fresh-out-of-college consultant with limited job skills," does that make a fresh-out-of-college accountant a "beanie baby"?

You know, like a junior-bean counter?

Pam Costa
Informa Corp.
Oakland, Calif.

COMPUTERWORLD welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Marylann Johnson, Executive Editor, Computerworld, PO Box 9071, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 875-8932; Internet: letters@computerworld.com. Include an address and phone number for immediate verification.

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DON TAPSCOTT

Heed the lesson that the recording industry ignored

PUNISHMENT CAN BE swift for those who underestimate the Web's power. Just ask the dumbstruck recording industry executives who ignored warnings that the Internet would take the legs out from under the existing music distribution business. The source of their grief is MP3. That's the software that compresses audio files down to a very small size. With a standard Net connection, it takes only a few minutes to download a song that has been MP3-compressed. Quality is almost as good as a CD.



Don Tapscott is a consultant. His most recent book is *The Diamond Age: Digital Economy*. Contact him at don@tapscott.com.

MP3 enthusiasts use freely available software to convert CD tracks into MP3 files and post them on the Web for fellow Netizens to enjoy. More than 20,000 tunes are already up for grabs. Legions of young Web surfers are routinely

downloading from the Web millions of dollars worth of today's most popular music without paying anyone a penny.

Most of that activity is illegal. But to the kids, it's wildly convenient and cost-effective. As for legality, they either don't know or don't care. Nor do they have any intention of stopping such behavior soon. Each day, more kids join in the fun.

Consider the position of Edgar Bronfman Jr., CEO of Seagram Co., which is in the midst of converting Seagram from a relatively Internet-proof liquor company into a completely Internet-vulnerable entertainment giant.

Bronfman's spending \$10.4 billion to buy Polygram NV and create Universal Music Group, the world's largest recording company.

A stock analyst recently asked why anyone would buy the new company's CDs when they could get the music free on the Web.

"Obviously, for the same reason we don't go through red lights. I don't think the majority of people have no conscience that they would deliberately attempt to do illegal things," Bronfman snapped. "If you are actually a consumer and using MP3, you would know it takes hours and hours and hours to download one song and the quality would be really quite poor."

Such fiction illustrates why the recording industry has no one to blame but itself for this

crisis. Music distribution via the Internet was predicted years ago by many, but the recording companies refused to acknowledge the new reality. They were fixated on their total control over the distribution channel of CDs and music stores.

But the logic of the Internet can't be denied. CDs are expensive and force people to buy a dozen songs when they really want only one or two. Downloading individual songs from the Web is overwhelmingly more logical, practical and cheap.

What the recording industry should have done is taken the initiative and developed the systems and technologies to sell songs via the Web and prevent unauthorized duplication. They're scrambling to put in place such a system now, but it may be too late. MP3 technology will be hard to dislodge, and many kids have become accustomed to the good life of free music.

This sorry episode should be a lesson to all business decision-makers. The Internet changes everything. You may not like the direction it's taking your company or industry, but denial won't stop the Net from making its presence felt. When it comes to the Internet, acknowledging reality is the first prerequisite to a successful strategy. ■

ALLAN E. ALTER

How to make the pending Y2K laws work for IT

ON CAPITOL HILL, four bills limiting year 2000 lawsuits are rumbling through the corridors; a fifth may soon follow.

S. 96, S. 461, H.R. 192 and H.R. 775 would make it tougher to sue information technology vendors and consultants. These bills, pushed by the high-tech industry, would protect its executives and limit damages to paltry amounts under vaguely worded conditions.

They aren't good for corporate IT, but we should work with the bills' sponsors anyway. It's the best way to improve them so that we get what we want: more help from our vendors and less time in court. (That's true, too, if bills like these are submitted at the state level instead of to Congress, as suggested by the Judicial Conference of the United States, an influential board of federal judges.)

I'm not in favor of kowtowing to high-tech industry lobbyists. But the reality is that it's hard



Allan E. Alter is Computerworld's department editor, managing. Contact him at alter@computerworld.com.

to swing a sword at them without decapitating ourselves. These bills don't distinguish between "users" and "vendors." It would be great if we could, but that's impossible: So many products include an IT component. Besides, can you convince a senator that your Fortune 1,000 company is the victim of some small software company?

The bills would also exempt corporate officers and directors from lawsuits. That's not in our interests — vendor fat cats should have their rear ends held to the fire. But as year 2000 lawyer Kirk Ruthenberg of Sonnenchein Nath & Rosenz in Washington notes: If the laws don't exempt officers, your own are fair game. Your CEO won't stand for that, I'll bet.

Think there should be clear, "do X-Y-Z and you're off the hook" guidelines? True, specific requirements would beat the messy wording in those bills. But if the laws are too specific, you'll have Washington telling IT managers how to do their jobs. Trust me — that's something you don't want to encourage.

So if striking these provisions only hurts us, what do we do? The answer is to applaud them, then improve them.

"What the user is really after is an assurance that the vendor will spend New Year's Eve with him," says Susan Nycum, an attorney at Baker & McKenzie in Palo Alto, Calif., who works with the Society for Information Management. She's right. Let's encourage legislators to amend the bills so they encourage assistance. They should adopt this principle: Reward suppliers that help customers and punish those that don't.

Let's offer protection from punitive damages for companies — vendors and suppliers — that work hard to help their customers solve the year 2000 problem. Punitive damages should be awarded only when a vendor or supplier refuses to offer assistance at low cost and doesn't make available free patches and guidance on products sold and systems developed in the past three years.

Companies that fail to provide detailed and accurate information about their year 2000 status or withhold assistance to hurt another company should also have the punitive-damage sword dangled over their heads.

At the same time, let's raise the ceiling on punitive damages for companies that fail this test. They should be far higher than the ridiculously low, \$250,000 damage limit the bills propose.

And let's allow lawsuits only for real — not imaginary — damages that occur after Jan. 1, 2000, and make it harder to sue people this year: We don't want to tie up year 2000 project managers now, when they're needed most.

Also, let companies sue for damages only from products they've actually used. That rules out the suits we're now seeing for selling or reselling products that aren't year 2000-compliant — a dangerous precedent for us all.

The sword of year 2000 justice is double-edged: it will inevitably cut users and vendors alike. The old, golden rule — do unto others as you'd have done to you — is the best way to know when the sword should be sheathed or swung. ■

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BUSINESS

RED CROSS GETS IT TRANSFUSION

After six years and \$164 million, the American Red Cross has merged a kludgy mesh of more than two dozen regional systems into a single national operation. The change required endless preparation to get users' cooperation and to avoid interrupting a service that's literally the lifeblood of its customers. **60**

WORLD WAR OVER MP3

Music companies went to war to prevent artists and other indie from selling music online in the MP3 format. Now they're making peace in the U.S. But the rest of the global music industry just renewed hostilities. **43**

MISLEADING CONTRACTS

Watch out for software licenses that leave out the right to use a critical component, Joe Auer advises. "Maintenance" agreements are sometimes for more than just service. **62**

IT PROS EXUDE Y2K CONFIDENCE

Information technology managers are increasingly confident that they'll be prepared for the ultimate deadline, according to Computerworld's latest survey. But that doesn't mean problems won't pop up on desktops and in other oocritical areas. **45**

BUT WHO IS REALLY READY?

IT people sound confident now, but many will have some explaining to do Jan. 1, when something they've overlooked goes ka-bloey, Paul Strassmann predicts. How to avoid that? Take a "war game" approach to planning. **48**

Y2K POSES CHEMICAL RISK

Chemical makers say they're ready for Y2K, but a government agency warns that small and midsize companies may not be — and that the result of unpreparedness could be chemical disaster. **48**

Y2K BUGS MAKE BUILDINGS SICK

Most CIOs focus on fixing year 2000 problems in IT systems, but what about building control systems? Sprinkler, security, environmental and other control systems are all at risk. **48**

FRESHENING UP IT WORLD VIEW

IT organizations need fresh thinking, fresh blood and a fresh image with business types who think of them as order-takers with no initiative, says the author of a new book on the future of business. **42**

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MIKE BAKER IS DIRECTOR

of Underwater Mechanics

at the Naval Weapons Station

in Groton, Conn.

He is also a member of the

Naval Weapons Station

in Groton, Conn.

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SKILLS CRUNCH: NO CURE IN SIGHT

A **SKILLS SHORTAGE** is still afflicting the IT industry, keeping salaries high and forcing IT managers to struggle to keep up with market rates, our Midyear Salary Survey shows. Those that can't pay top dollar are losing staff and being forced to interview less-qualified wanna-bes with puffed-up résumés.

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CIOs TACKLE ROLE OF CHANGE AGENT

Author says CIOs need new ways to think; vets say 'thanks, we've got that covered'

BY THOMAS HOFFMAN

MOST CIOs have been pigeonholed by senior managers as order-takers who lack the out-of-the-box ideas required to lead their organizations in today's fast-changing business environment.

So said Robert Baldock, a global managing partner at Andersen Consulting's financial services practice and the author of a new book on the top-

ic, *Destination 2: The History of the Future*.

Keeping up — let alone getting ahead — is "going to require a new type of free-thinking individual, not someone who's grown up through the IS ranks," said Baldock, who's based in London. Companies need to bring in people with fresh insights, he said.

A perfect example, Baldock said, is Citibank, the New York-based bank that two years ago brought in Ed Horowitz, a media-industry veteran, to head

up its electronic-commerce push. Given Horowitz's background in the entertainment industry, Citibank figured he could help make electronic banking more pleasant for its customers. "If anyone is going to make banking a pleasurable experience, it's someone from Hollywood — not from IT," Baldock said.

But some career IT veterans have responded magnificently when confronted with wrenching changes to their businesses. Take Liz Shuttleworth, CIO at Vasic Foods International Inc. Last March, the Cherry Hill, N.J., pickle maker was spun off from parent Campbell Soup Co., leaving Shuttleworth

with only one year to create an IT infrastructure, replace 1,200 PCs and roll out financial and manufacturing applications.

As Shuttleworth and her team went shopping for new systems, she said she took a no-frills approach. "If a software package delivers 80% of what you want, that's good enough. It's the other 20% of functionality that will cost you 80% of



AUTHOR ROBERT BALDOCK: IT needs a new tack

your time and dollars and will kill you," she said.

People skills and communication are also essential ingredients to change management. "You have to have a staff that can think on their own. Then you [as a CIO] have to toss out all of the 'what-if' scenarios at them," said Mike Tiersman, vice president of IT at Credit Suisse First Boston Corp. ■

Companies Try to Bridge Foreign Hires' Culture Gap

U.S. slang, customs can be unintelligible

BY BARE COLE-GOMOLSKI

Victoria Markus, a Ukrainian-born software engineer at Bell Atlantic Corp., spoke fluent English when she landed her job five years ago. But she knew that her thick accent made it hard for colleagues to understand her.

Like many foreign-born information technology people, Markus also has a hard time with American idioms — such as "putting your foot in your mouth" or "going out on a limb." As companies hire more IT people raised outside the U.S., some progressive companies have begun to offer training. In American business etiquette — including when to speak up or make eye contact. Accounting and consulting giant PricewaterhouseCoopers (PWC) offers cultural awareness training, language lessons for consultants and their families and cross-cultural team building classes.

Dick Biery, global director at PWC, said such training is essential to get consultants from different backgrounds to work well together. "If we don't provide this training, we tend to lose these folks quickly," said Dan Brennan, curriculum manager for IT at Bell Atlantic.

Recently hired college graduates can also be technically qualified, but poor communicators, said Marjorie Castle, a

partner at The Castle Group Ltd., a training firm in West Chester, Pa., that offers classes in American business etiquette. The classes cost about \$3,000 per day for a group of 10. One exercise involves doing a demonstration in front of the group, which is videotaped. Markus, who took the class last year, said the videotape helped her identify and reduce signs of nervousness. She's now more confident that she knows what behavior is appropriate at work. She's since been promoted to lead five programmers.

A four-day training session can't resolve all the communication issues, said Bell Atlantic's Brennan, "but it gives them solutions." ■

Software Links Key to Start-Up Steelmaker

Mesh of process control systems was puzzle

BY CRAIG STEEDMAN

Qualitech Steel Corp. came up with a new way to process steel bars. But to make it work, the start-up company had to piece together specialized software to run its mill — a job that tested its mettle.

Qualitech needed to coordinate the work of the three vendors providing pieces of the process control system for the Pittsburgh, Ind., mill. It also had to get them to extend the software to match the new production techniques it uses.

Meanwhile, the company had to hold off on several desired software improvements to stay within its budget for the process control system, which was allotted just \$5 million of the \$234 million spent to build the mill. "We're a start-up operation. There's no parent company and budgets are to be met," said John Schumacher, manager of information technology at Qualitech.

The issues facing Qualitech are prime ex-

amples of the process control hurdles routinely thrown at manufacturers in heavy-duty industries such as steel, pulp and paper, textiles and even chemicals, said Bill Swanton, an analyst at AMR Research Inc. in Boston.

New mills in those businesses are few and far between and often have unique production processes, Swanton said. As a result, software tailored to

them usually requires lots of customization and integration, he added.

Qualitech broke ground for its mill in late 1996 and began production there last summer. The mill can make 500,000 tons of steel bars each year for uses such as car axles and drivetrains.

Software developed by Buffalo, N.Y.-based Computer Task Group Inc. controls the mill's melting furnace and handles jobs such as order entry and production scheduling. A package from General Electric Co. controls the equipment that rolls the steel into bars, and a third piece of software came with an Italian-made furnace used to heat the steel before it's rolled.

In its contracts with the software vendors, Qualitech required them to make their products work together. It also figured out up front what software changes the vendors could make in the allotted time, Schumacher said.

But Qualitech is "still fighting our way through" perfecting the system, said Jim Cash, director of marketing. ■



QUALITECH STEEL made the most of its process control budget in building its new mill

Americans mean hard and seem to talk less fast to workers from other cultures

Foreign professionals may be uncomfortable making eye contact, especially with managers

Smiling and nodding means agreement in the U.S., but in many Asian cultures it simply means "I hear you"

A thrower-up is a put on the back in American, but an insult in other cultures

Workers from other cultures may seem unhelpful to Americans who place a high value on making friends at work

U.S. MUSIC BIZ ACCEPTS MP3, GLOBAL PUBLISHERS REBEL

Lycos partner hit with lawsuit in Norway

BY ANN HARRISON

AFTER TRYING unsuccessfully to stem a tidal wave of Web sites from distributing music on the MP3 audio format, the Recording Industry Association of America (RIAA) has finally accepted online music distribution. This week, it will hold its second meeting to develop an open standard to secure MP3 and other digital music delivery systems.

But last week, the international recording industry renewed the battle by launching criminal legal action against a Norwegian partner of Lycos, to suppress its MP3 search engine. The International Federation of the Phonographic Industry (IFPI), which represents 1,300 record companies in more than 70 nations, said the search engine encour-

ages "massive systematic copyright piracy" by searching for MP3 files and storing links in a database. The action was filed by IFPI Norway against the Norwegian firm FAST Search & Transfer ASAA.

MP3, which stands for the

music has flourished.

The RIAA has gathered a coalition of music industry and technology companies to create an open specification for secure digital music distribution — an effort known as the Secure Digital Music Initiative (SDMI). According to RIAA spokesperson Alex Walsh, the group is meeting this week to work on an SDMI spec due by midyear.

The RIAA, whose members create, manufacture and/or distribute 90% of the music produced and sold in the U.S., once condemned MP3 sites for encouraging the downloading of free music.

The National Music Publisher Association (NMPA), which represents the companies that hold the copyrights, also gave in.

Soon after Lycos Inc. launched its MP3 search engine, the Harry Fox Agency, the NMPA's licensing body, issued a Digital Phonorecord Delivery license allowing the online music

company GoodNoise to sign bands, such as They Might Be Giants, and sell downloadable MP3 tracks for \$9.99 each or \$8.99 per album.

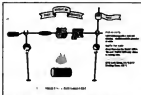
"Efforts to eliminate MP3 as a standard are doomed — it's simply the economics of distribution," said Lucas Groves, an analyst at New York-based Jupiter Communications Inc.

Software piracy losses are built in to software pricing, he said. The music industry faces "a long, painful process to adjust to a model that accepts the existence of piracy on a much bigger scale than people making tapes," he said.

MP3 sites are still tweaking business models with a variety of revenue streams. Audio portal MP3.com sells CDs with free MP3 files and also markets bands, manages fan clubs and sends out concert invitations. ■

MORE THIS WEEK

Colleen Das Tapscott writes about MP3 and the music industry. See page 28.



GOODNOISE, an online music company, sells downloadable MP3 tracks of bands like They Might Be Giants (band's Web site pictured above)

Motion Picture Experts Group audio layer 3, compresses digital audio files at near-CD quality. Software to create and play MP3 files is freely available, so online pirating of copyrighted

MP3 Moments

December 1998 — Frustrated by delays in the release of his band's new album, *They Might Be Giants*, Chuck D's rap group Public Enemy posts MP3-formatted tracks on the band's Web site. His distributor, PolyGram-US, forces him to remove the files.

October 1998 — The Recording Industry Association of America is awarded a temporary restraining order blocking the distribution and sale of Diamond Multimedia's (www.diamond Multimedia.com) the portable MP3 recording device, which the RIAA said violated intellectual property rights.

December 1998 — The Record Industry Association of America accepts MP3 and has first meeting on ways to limit piracy.

February 1999 — Lycos Inc. creates a search engine for MP3 sites with links to more than 500,000 files. 10 times larger than any existing MP3 databases.

February 1999 — The National Music Publisher Association issues its first MP3 license.

March 1999 — Association claiming to represent 1,300 global music publishers has criminal legal proceedings against Lycos partner in Norway to suppress MP3 search engine.



RAPPER Chuck D

Play Keeps High-Pressure IT Job in Hand

Engineers keep online business in business

BY STEWART DECK

AS the hard-charging, always-on aura of electronic commerce begins to move into mainstream corporations, traditional businesses may do well to take note of the management culture used in Silicon Valley — where playing video games and pool is normal at work, as are casual dress and pets that come to the office to visit.

Just ask Changming Shih, an engineering director at Infotek Corp., a destination Web site based in Sunnyvale, Calif. Playing games together allows people to understand more about the other people they work with. With this kind

of insight, they're better able to work on engineering projects together by knowing each other's personalities," he said.

Shih oversees those engineering projects that are the core of the Infotek and Go Network (www.go.com) Web sites. Infotek manages Go.com for Go's parent, Walt Disney Co., which also owns a large share of Infotek.

Night and Day

His four engineering groups — search, directory, page writing and operational — write the code for the sites and make sure they stay up and operating around-the-clock. Shih himself carries a beeper 24 hours per day and has an Integrated Services Digital Network line in his home to help troubleshoot site difficulties.

"Changming is responsible

for the heart and backbone of Infotek and the Go Network," said Bill Rose, vice president of content search and directory at Infotek.

"We have a lot of very talented engineers, so we need someone in that position who can speak their language and who can manage the personalities that come along with talented engineers," Rose added.

"It's very important to create a healthy and enjoyable place to work," Shih said. He lets workers bring in pets and allows game time in the office. He even joins the pool games. "But at the same time, we're always challenged to deliver products as soon as possible."

"Sure, some people would say this is a high-pressure job in a very fast-paced industry without a lot of existing models to follow," Shih said. "But I



Infotek's Changming Shih lets employees bring in pets and allows time for games "to create an enjoyable place to work."

get to work on one of the biggest Web sites in the world and create something new every day." ■

MORE ONLINE

For electronic commerce resources, visit our Web site.
www.computerworld.com/resources



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than worry about effectively
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IT PROS UPBEAT ON DATE CHANGE

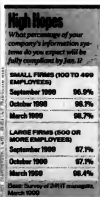
Study shows managers' growing faith in their systems' readiness

BY RICK BAIA

WITH A little more than nine months to go, information technology managers are increasingly confident that their companies will beat the year 2000 problem in time.

An overwhelming 77% of 206 IT managers surveyed to Computerworld's latest year 2000 confidence survey two weeks ago said they expect that all of their organizations' information systems will be ready to handle the date change. That's up from 71% in October 1998 and 66% in September. In this month's survey, only three respondents said 10% or more of their systems wouldn't be ready.

The IT pros are also more confident that year 2000 won't



have any significant impact on the nation's economy. Slightly

more than two-thirds said year 2000 will yield some spot problems but no major economic impact. Another 17% foresee little or no impact.

"I don't think planes are gonna fall out of the sky, and I don't think power will go out," said Anthony Urban, MIS manager at Potter Electric Signal Co., a St. Louis manufacturer of sprinklers, alarms and other products for building security industries. The only major problem may be "the fact that people will panic," he said.

Other year 2000 watchers are now offering similar assessments. Peter de Jager, widely credited with raising the issue in his 1993 Computerworld column "Doomsday," recently posted an article on his Web site (www.year2000.com) saying doomsday scenarios such as global bank failures

and power outages have been avoided.

Despite the confidence IT managers exude about their own compliance, they will have many concerns about the compliance of trading partners.

When IT managers were asked to rate their concern about suppliers and customers using a scale on which 1 meant "not at all concerned" and 5 meant "extremely concerned," about 31% answered "4" or "5." But 37% answered "1" or "2."

Kazim Isfahani, a year 2000 analyst at Giga Information Group Inc. in Cambridge, Mass., said he sees similar numbers when it comes to supply-chain concerns.

"Whenever there's an unknown, it's always easier to expect the worst, and I think that's what's happening," he said.

John Toye, year 2000 compliance coordinator at health insurer Blue Cross/Blue Shield of Maine, said most of his company's vendors indicated they're ready. He said those that aren't still make him uneasy, but he added that all vendors have indicated they will be ready by June.

Having Backup

Have you developed, or do you plan to develop, contingency plans in the event of a year 2000-related failure?

SMALL FIRMS*



LARGE FIRMS*



* Small: 100 to 499 employees; Large: 500 or more employees. Based: Survey of 241 IT managers, March 1999

Despite such assurances, analysts continue to identify new areas in which unexpected year 2000 bugs could spring up (see story below). ▀

Chevron Enlists Users to Run Date Fixes on 30,000 PCs

Spreadsheet errors are small but numerous

BY JULIA KING

So many PCs, so little time. That, in a nutshell, sums up the biggest desktop year 2000 problem at most companies.

Chevron Corp. has more than 30,000 such problems. They're scattered across highly decentralized business units in about 90 countries.

To help find and fix PC-based date bugs, the energy giant is enlisting receptionists, accountants, salespeople and every other worker who uses a PC or laptop in their daily work. Using a software-based tool called OnMark from Phoenix-based VisioSoft Inc., employees are being asked to find the date problems in the data files, spread-

sheets and other programs they have created themselves. The tool also works on commercial software applications such as Microsoft Corp. Office software.

Ed Karr, Chevron's year 2000 project manager, estimated that about half of the company's 30,000 PC users have self-tested their desktops so far.

As for the other half, "what gets done is really in users' hands," Karr said. "We're not centrally controlling this. It's users

who created the files, database applications and spreadsheets," so who better to find and fix the date problems, he added.

Just how novel is Chevron's

enlist-the-troops approach?

Michelle Cammarata, year 2000 program manager at Yellow Services, the information technology arm of Yellow Corp., a transportation company in Overland Park, Kan., said companies are increasingly calling on their employees to ferret out problems with their own software.

Yellow Corp., for example, has more than 5,000 PCs just at its corporate headquarters. There are hundreds more desktops in the field.

"There's no way we could have a big enough team to do it all, plus the risk is pretty low," Cammarata said.

Tom Oleson, an analyst at International Data Corp. in Framingham, Mass., agreed.

"IT cannot fix all of the PCs in a company. The IT budget is only 2% of revenues and maybe 5% of people in a large company. It's impossible for that 5% to handle the other 95%," Oleson said.

At Chevron, Karr's team is providing testing tips and information about how to use the VisioSoft tools on an internal Web site.

Users can load the OnMark tool locally on their PCs or download it from a network-based server. It then scans all

spreadsheets and database applications for date problems, assigns each a severity rating and then fixes them according to the user's priorities.

Karr said about 1% of the thousands of spreadsheets are mission-critical to Chevron.

"The majority are not going to bring the company down if they don't work," he said. "But it will be a nuisance that will cause some [teeth] gnashing." ▀



CHEVRON'S ED KARR: About 15,000 PC users have run Y2K tests

SNAPSHOT

FLEET FINANCIAL GROUP INC.		BANK OF AMERICA	
Fortune 500 rank*	183	230	
Spending so far**	\$7M	\$37.5M	
Estimate of total year 2000 cost	Up to \$100M	\$75M	
Notes/Progress	Plans to finish testing in June	Testing done through 1999	

SOURCE: SNAPSHOT BY JEFFREY A. LERMAN FOR COMPUTERWORLD

IT PROS UPBEAT ON DATE CHANGE

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The IT pros are also more confident that year 2000 won't

High Hopes

What percentage of your company's information systems do you expect will be fully compliant by Jan. 1?

SMALL FIRMS (100 TO 499 EMPLOYEES)

September 1998 96.9%
October 1998 98.1%
March 1999 98.7%

LARGE FIRMS (500 OR MORE EMPLOYEES)

September 1998 87.1%
October 1998 87.1%
March 1999 96.4%

Base: Survey of 241 IT managers, March 1999

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SNAPSHOT

Joining Forces

Here's what soon-to-be merged banking giants Fleet and BankBoston are doing with their year 2000 efforts:

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Fortune 500 rank*	193	238
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* As of April 27, 1998. ** First 10-12 days of May. 13. Distribution: 10-14 days on March 5.



CHEVRON'S ED KARR: About 15,000 PC users have run Y2K tests

CHEM SECTOR Y2K READY?

**Feds fear smaller players
may be vulnerable**

BY PATRICK THIBODEAU
WASHINGTON

FEDERAL OFFICIALS are worried that many small to mid-size chemical manufacturers and processors may be susceptible to year 2000 problems and wary of the possibility of interruptions or accidents in chemical production.

"Clearly, there is a need for larger corporate entities to recognize their supply chain weakness and shore them up," said Gerald Poje, the year 2000 coordinator at the U.S. Chemical Safety and Hazard Investigation Board in Washington.

In a report earlier this month, the board said large chemical companies are making an intense effort to become year 2000-compliant. But it said there was little information about the readiness of thousands of smaller U.S. companies involved in everything from generating to transporting hazardous chemicals. That dearth of information has translated into concern at the chemical safety board. After meeting with industry experts, academics, union officials and executives from large companies, the board concluded that there is a "potentially significant risk" of shutdowns or accidents in the chemical industries, Poje said.

The Chemical Manufacturers Association, which represents 190 companies,

said the chemical safety board needs survey data to back up its concerns, according to Joe Mayhew, a spokesman at the Washington-based group.

But Dennis Calhoun, the health, safety and environmental manager at Citgo Petroleum Corp. in Tulsa, Okla., said one indicator of potential problems is the inability of the small companies to participate in industry forums on year 2000 because they don't have the resources to do so. Those forums have proven "invaluable in helping us save time, effort and energy in sharing what other people have done," he said.

Chemical companies are susceptible to shutdowns because of the nature of their safety systems, experts said. Chemical processing systems are designed to shut down if something isn't working, right, said Charles Isdale, a consultant in process controls and a senior lecturer at Texas A&M University in College Station, Texas.

Chemical systems are also built with "what we lovingly call a big red push button" that will allow an operator to manually shut down a process if a computer malfunction, said Angela Summers at Premier Consulting Engineering, a unit of Triconex Corp., an Irving, Calif., maker of emergency shutdown systems.

But no system is foolproof. Experts won't rule out the possibility of a cascading series of year 2000 events, such as power outages, that could result in the release of chemicals. The chemical safety board advises local governments and emergency services to investigate the risks in their communities. ▀

JUST THE FACTS

Action Plan

The chemical safety board recommends the following:

■ Facility managers should be prepared to manually take control of processes.

■ Chemical workers and emergency responders should be provided with training and tools to cope with any problem.

■ Congress should create year 2000 incentives, such as tax write-offs.

■ Laws should be made available to businesses that deal with hazardous substances.



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BRIEFS

Power Grid Reported Safe

U.S. Department of Energy Secretary Bill Richardson said the nation's electric grid shouldn't experience any problems on New Year's Day due to year 2000 bugs. "I am confident that there will be no power failures with small power companies [or] big power companies," Richardson said. A special Senate committee probing year 2000 readiness in various industries has reported that year

2000 power problems could occur, particularly in rural areas where utilities reacted late.

Honesty 2000?

Many corporations are allowing legal advisors to sift communications about their year 2000 efforts when they should be developing best practices easy to avoid potential lawsuits later, said Fred Talbot, a business professor at Vanderbilt University in Nashville.

Talbot recommended that businesses share a "factual picture" of their year 2000 status, costs and potential problems with customers and business partners that could be affected.

Software tools for
Business Intelligence
solutions

New Business Intelligence software tools can help you consolidate data assets
across platforms and make desktop analysis of enterprise data routine.



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money, you might manage it differently. Only a fraction of business
you can use it all. New Business Intelligence solutions can help you leverage data assets across your company
decision makers to call up answers at will instead of waiting for a report. The data's already there. And now, so
use it - on platforms as diverse as Windows NT, Sun Solaris® and all
study CDs, demos and trial code, visit us at www.software.ibm.com/bit

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*Visual Warehouse™ OLAP edition consolidates data from Oracle, Sybase, SQL Server and DB2® systems to speed decisions at any scale.
IBM Intelligent Miner™ pinpoints hidden relationships in hoistacks of customer data to produce actionable marketing insights.
VisualAge® for Java slashes development time for new applications because existing ones don't have to be rewritten from scratch.
SecureWay™ Host Integration Solution combines traditional emulation with secure access to all your Internet-based data resources.*

How to Make Your Buildings Y2K OK

Air conditioners, security alarms, locks, sprinklers — all of them could be zapped by the Y2K menace. Here's how to achieve real-estate readiness

BY DEBORAH RADCLIFF

DAVID TUCKER feels like a fish out of water. As CIO at the 27-facility Seton Healthcare Network, in Austin, Texas, he says he knows little about building-control systems. But he's learning.

"In any organization where the CIO is ultimately responsible for year 2000, we're getting out of our native element," he says.

That's because year 2000 directors like Tucker realize it's time to direct their attention to building systems that control everything from heating, ventilation and air conditioning to smoke detectors, elevators, alarms, power generators, sprinklers, building access mechanisms — even telephone systems.

In all, the 16,000-member Building Owners and Managers Association (BOMA) in Washington has identified some 24 building systems at risk of year 2000 failure.

If you haven't begun to look at your building systems, it's best to start now.

Folks who have there suggest the following plan of action:

Build your team. Ina Kamenz, senior vice president of the year 2000 project at Marriott International Inc. in Washington, placed a facilities management engineer at the head of the building systems portion of her team.

Identify at-risk systems. Don't count on your facilities people to know this.

"Many building facility engineers will give a model num-

ber of the pump, but not the pump controller. In buildings, it's all about controls," notes Jack Halliwell, president of Halliwell Engineering Associates Inc. in Providence, R.I. (www.heinc.com).

Help engineers identify vulnerable systems during walk-throughs. Look for PC-run building programs, stand-alone control panels, mechanized equipment and anything with a digital readout. BOMA (www.boma.org) sells a guide with a helpful checklist.

Trim the fat and prioritize critical systems. As in traditional IT projects, write letters to vendors, meet with them or visit their Web sites. In instances when vendors have gone out of business or don't respond, year 2000 remediation can only guess if building mechanisms and control systems contain date-sensitive embedded chips. The only way to know for sure is to test. If it's more cost-effective, replace the system in question, suggests Halliwell.

Develop a backup plan. At this point, it's tempting to remedi-

ate or test. But first, determine how to continue operating if the system fails during testing.

Last year, when a gas production company set the clock ahead in a programmable logic controller, the date wouldn't roll back to 1998, effectively freezing a \$20,000 machine, says Scott Shemwell, who heads the year 2000 practice for process industry clients at the IT consulting firm MCI Systemhouse in Atlanta.

Test the system in question. Determine how you will roll the date forward (whether on-line or off-line) and when (usually weekends). Then, decide who will test. Marriott's Kamenz relies heavily on vendor guidelines, while Ed Leard, general manager of IT at Yamaha Corporation of America in Buena Park, Calif., suggests asking the vendors to conduct tests when possible. For PC-run software that controls multiple devices, Halliwell recommends creating your own performance-based test specifications for the vendor to follow.

Repair, Patch or replace soft-

ware control programs, replace embedded chips and upgrade or replace PCs running building management software.

If necessary, replace the entire piece of equipment.

Seton's remediation, which began in earnest in February 1998, is 85% done at an estimated cost of \$150,000 to \$200,000 — between 15% and 20% of overall year 2000 remediation costs, according to Tucker.

Retest repaired systems. "We get a lot of vendors saying their patches or products are compliant... but we take the most prudent course and retest," says Jim Anderson, year 2000 manager at St. Joseph Health System in Sonoma County, Calif.

And remember to test each component in the context of the entire system, Halliwell

adds. "Say an energy management system controls boilers, chillers and air handlers through a local control panel that's wired into a network control module with its own real-time clock. That module is wired back to the PC, which also has a couple of different clocks," Halliwell says. "If you just replace one of those pieces in that system, the rest of the system may not recognize it."

Plan contingency work-arounds. Seton is considering extra generators in case its electric company falters.

Seton plant manager Clois Beckwith says his staff will manually lock doors and turn off lights should the need arise. "If you have a security system dependent on people swiping cards for access, you'd better make sure it passes year 2000 compliance," Beckwith says. "If it doesn't, you'll have a lot of people shut out of work."

Radcliff is a freelance writer in northern California. You can contact her at DeRad@aol.com.



Elevator maker: No big plunges on New Year's Day

When the year 2000 rolls around, elevators won't go screaming down their shafts, even if a date-sensitive controller gets overloaded.

"Because of all our testing, we've found the urban myth just isn't true. If an elevator's confused, it will probably go to the first floor and open. And almost every system can be manually over-ridden," says Gerry Ladner, vice president of government and industry affairs at BGS&B.

Pete Kowalski, who sits on the Year 2000 Oversight Committee at Otis Elevator Inc. in Farmington, Conn., concurs.

"There isn't a problem from an elevator con-

troller perspective because we have no embedded clocks that affect elevator operations," Kowalski says.

"But we do have a concern that third-party peripherals — elevator card-readers or stand-alone PCs — attached to our systems might not be compliant," he adds.

Otis technicians are checking elevators for peripherals, and service managers are contacting vendors and sending letters to clients detailing their findings.

For backup, Otis plans to keep more technicians on call on New Year's Eve.

— Deborah Radcliff

PAUL A. STRASSMANN

BRIEFS

Comparing Sites

Web Criteria Inc. (www.webcriteria.com) today is set to launch a service that compares the performance of Web sites from a user perspective. The SiteProfile service will allow Web site administrators to compare the structure and usability of their sites with those of other Web businesses. To evaluate a site, Web Criteria will simulate a customer's behavior and report on such benchmarks as speed, ease of navigation, freshness and composition. A report on three sites costs \$495. www.webcriteria.com

Tracking URLs

Network Solutions Inc. in Herndon, Va., said last week that it consolidated several NSI and InterNIC Web sites about registering, reserving or changing a Web address into one site (www.networksolutions.com). NSI registers most Web addresses and pioneered those ending in .com, .net, .org and .edu.

Catalog Maker

IBM has announced Catalog Architect, a content management tool for creating online catalogs. Aimed at users of IBM's Web Commerce server software, Catalog Architect costs \$3,000. It helps users update content and maintain complex catalogs while checking data for completeness and consistency.



NEW REPORTS

Online Credit Up

A new report from Forrester Research Inc. predicts that consumers will obtain 6.5 million loans and credit cards on the Internet by 2005 — a figure representing more than \$167 billion. "Credit at the Threshold" predicts that one-sixth of credit cards issued will be obtained online in five years. Drivers of this trend include faster access to information on the Internet and tools like E-Learn Inc.'s Web site (www.elearn.com), which helps consumers compare products and prices. Cambridge, Mass.-based Forrester advised firms wishing to participate in the "threshold" market to streamline back-end lending practices and prioritize products.

Forrester reports are by www.forrester.com

Web-based ERP

As users look to extend enterprise resource planning (ERP) systems across the Web, they can benefit from tools that combine a software in collaboration/workflow with industry-standard Web development, says a new article from Patricia Seybold Group. The six-page article — called "Customers Extend the Reach of ERP Systems with Lotus Developer" — describes customer examples of electronic business applications based on Lotus Development Corp.'s Domino. The price is \$295. www.pgsgroup.com

How are your Y2K contingency plans?

MANY COMPANIES are assuring the public that they will be year 2000-compliant. But chances are the same companies that are crowing today will have to eat crow in January, when something fails anyway. When that happens, some unfortunate information technology executives will have lots of explaining to do. How will

they get themselves off the hook? Some plan to fall back on the argument that software is inevitably flawed and fallible. But that won't work. The only way to defend yourself is to have a strong, crisis contingency plan. And the best way to test one is by adapting the military's long-used "war game" approach.

Many IT executives will be tempted to plead that there's no such thing as a sure software fix. After all, not even Bill Gates can get software to function in a public demo.

But executives, regulators and litigators aren't ready to accept the software fallibility defense. You can't plead that you are blameless if the risks are known and well-documented.

Contingency plans and contingency rehearsals are mandatory. You can't claim year 2000-readiness unless you have prepared contingency plans, rehearsed their implementation and demonstrated how your organization would cope.

But how do you come up with a reliably tested plan? There's an entire discipline built around testing software, but nothing similar exists for proving that your contingency plans don't have a fatal flaw.

Year 2000 risks have similarities to the situations one encounters when trying to neutralize national security threats. The best way to check out how the military copes with disabling situations is to learn from cases in which contingency plans worked and from those in which they failed. What national security organizations call "war gaming" develops knowledge on how to prepare to cope with threats before they become disasters. All year 2000 contingency plans involving critical services — especially where there's potential loss of life — should be subject to such gaming exercises.

In such a game, the "white hats" would be the year 2000 management team. The "black hats" would be experienced professionals with industry-specific experience, who would try to wreck the neat assumptions in the contingency plan. The black hats must think of all the improbable combinations that could happen coincidentally, making systems fail on a massive scale.

To stage a year 2000 war game, the white hats must disclose their plans to the black hats. The

game is then played in eight-hour rounds, assuming a start at midnight on Dec. 31, 1999. For starters, the attackers would confront the defenders with a failure scenario for which there is no preplanned solution. It would then be up to the year 2000 management team to demonstrate, in less than 30 minutes, how it would get out of that situation. At the end of each round, a referee would judge which side prevailed. Such an exercise could be completed in a day and would generate a survival rating about the organization's prospects of coping with problems during the first week of 2000.

Much has been written about year 2000 as being a technical — as well as an organizational — problem. But hardly anything has been said about how to make contingency plans verifiable. It's time to explore conceivable scenarios that soon may be encountered as real predicaments. If a year 2000 management team can survive the challenges of inde-

pendent black hat professionals, that alone may be adequate proof of "due diligence," even if some improbable mishap ends up in litigation. ■

Strassmann served in the Pentagon when most crises required a realistically simulated exercise prior to committing troops and incurring political risks. Contact him at paul@strassmann.com.

Test your
contingency
plan using the
"war game"
approach.



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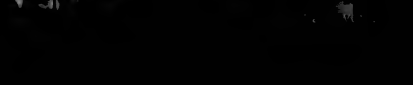
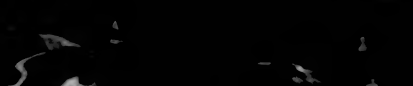
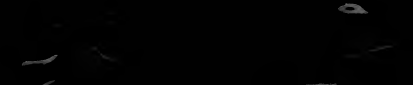
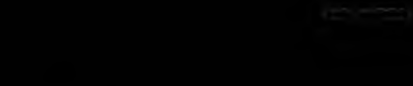
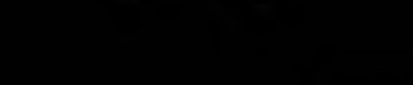
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**SALARY
SURVEY**

No Cure in Sight

Computerworld
Midyear Salary Survey
Special Report

Last year's shortage of top technology talent was enough to make many hiring managers queasy. Will the fever finally subside in 1999? By Steve Alexander

IF 1998 WAS A GREAT YEAR to be in IT, 1999 looks to be more of the same: rising salaries, personnel shortages that spell tremendous opportunity and signing bonuses for those who are most in demand. Salaries have risen so sharply in the past year and a half that information technology managers are struggling to keep up with market rates — or to even know what they are.

As a result, Computerworld this winter conducted its first midyear salary survey, to get a sense of what managers in select major cities are

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SALARY SURVEY

Continued from page 53

paying IT professionals at the halfway mark. The findings were no surprise: IT professionals can still demand top dollar, and there appears to be little easing of the skills shortage in sight.

They also can use that shortage to secure higher-ranking positions. And those working on key IT projects can seek retention incentives at a time when outside offers abound.

The skills most in demand appear to be Oracle database administration, senior programmer/analyst skills of all sorts, C++ and Unix expertise, and networking and systems administration experience with Novell Inc.'s NetWare and Microsoft Corp.'s Windows NT.

IT managers will have to keep looking over their shoulders to make sure employees aren't picked off by other companies offering higher salaries.

To head off defections, rearranging salary scales to eliminate inequities between the recently hired IT worker and the longtime employee has become a fact of life. Companies that can't offer either higher salaries or bonuses are likely to lose key staff members.

Preski's Plight

Consider the plight of Joseph Preski, director of MIS at Hyundai Precision America Inc., a San Diego manufacturer of freight-shipping containers. Preski says he can't afford to ramp up salaries or award bonuses because his firm has been adversely affected by the economic crisis in South Korea, where its parent company is based.

As a result, he says, approximately 80% of the team he put together for an SAP implementation "left for double what they were making here. And they

I see a lot of people pulling off of Y2K projects, and I see contractors who aren't able to find work as fast as they did before. It takes weeks or months now.

ROB KOGAN,
NAUTILUS INSURANCE

were people I would like to have kept because they knew the business and the company."

Talent Void

To fill the talent void, many inexperienced people are trying to get jobs as programmers, says Mike Baker, director of information systems at Underwood Memorial Hospital in Woodbury, N.J.

"You find a lot of kids passing themselves off as heavy-duty programmers because they know a little C++, have done some Visual Basic and have worked on a PC. But most of these people don't quite know what such a position entails, and I think a lot of the smaller technical schools are giving these people the false hope they are completely trained after six months of courses," he says. "They don't have anywhere near the background of a four-year graduate."

Many IT managers are bracing for a 1999 that appears to be 1998, Part II.

Job Title	Experience	Atlanta	Austin, Texas	Boston	Chicago	Cleveland	Dallas	Denver	Detroit	Houston
Chief Information Officer	1-2 years 3-4 years 4+ years	\$99,400 NA \$123,500	\$64,500 \$124,000 NA	\$147,000 \$162,700 NA	\$107,200 \$124,400 \$151,300	\$130,000 \$147,000 \$198,300	\$140,300 \$106,600 \$194,000	\$82,000 \$82,700 \$117,000	NA NA NA	NA NA NA
Director of IS/MIS	1-2 years 3-4 years 4+ years	\$64,200 \$93,800 \$94,100	\$77,300 \$79,900 \$100,900	\$89,000 \$106,700 \$108,900	\$91,000 \$106,400 \$110,000	\$66,400 \$93,100 \$99,400	\$105,400 \$126,800 \$106,700	\$60,000 \$67,900 \$54,000	\$81,000 \$102,000 \$17,400	\$96,300 \$106,700 \$106,700
Computer Operations Manager	1-2 years 3-4 years 4+ years	\$49,300 \$68,000 \$69,500	\$66,400 NA \$73,800	\$65,100 \$70,800 \$76,200	\$62,700 \$74,800 \$76,900	\$65,600 \$71,500 \$77,700	\$80,800 \$88,900 \$99,100	\$62,700 \$61,300 \$76,800	\$60,300 \$75,000 \$82,900	\$53,200 \$57,000 \$76,300
Network Administrator/Analyst	1-2 years 3-4 years 4+ years	\$36,700 \$61,400 \$53,300	\$52,500 \$68,800 \$65,500	\$45,000 \$56,900 \$62,800	\$44,800 \$49,900 \$59,100	\$54,000 \$54,300 \$59,100	\$50,800 \$55,400 \$60,700	\$43,300 \$51,900 \$53,500	\$46,500 \$56,000 \$59,800	\$45,800 \$52,400 \$60,900
LAN Manager	1-2 years 3-4 years 4+ years	\$59,000 \$62,700 \$57,900	\$60,000 \$64,000 \$70,400	\$48,200 \$59,000 \$70,800	\$53,500 \$63,800 \$68,800	NA \$54,300 \$57,500	\$49,700 \$63,800 \$64,000	\$45,200 \$49,700 \$56,000	\$43,700 \$54,200 \$66,300	\$53,300 \$61,200 \$69,700
Project Manager	1-2 years 3-4 years 4+ years	\$46,000 \$56,100 \$64,500	\$58,100 \$69,900 \$78,000	\$50,500 \$65,400 \$75,000	\$62,800 \$76,400 \$77,500	\$59,500 \$63,500 \$74,400	\$65,300 \$75,800 \$73,600	\$45,900 \$51,300 \$62,500	\$63,000 \$78,000 \$80,700	\$51,600 \$55,800 \$63,800
Senior Systems Analyst	1-2 years 3-4 years 4+ years	\$57,500 \$69,000 \$75,000	\$56,900 \$63,000 \$70,000	\$64,500 \$66,200 \$73,100	\$51,700 \$62,400 \$67,500	\$56,400 \$60,100 \$66,600	\$57,000 \$66,700 \$70,400	\$47,500 \$52,800 \$62,500	\$48,000 \$60,000 \$67,800	\$43,900 \$52,700 \$61,500
Senior Systems Programmer	1-2 years 3-4 years 4+ years	\$47,500 \$62,000 \$63,300	\$54,400 \$60,000 \$69,000	\$51,400 \$55,500 \$66,300	\$43,200 \$61,300 \$67,400	\$53,000 \$59,900 \$61,900	\$63,000 \$60,400 \$71,400	\$52,400 \$56,000 \$65,500	\$47,500 \$56,000 \$54,500	\$48,300 \$56,200 \$65,200
Senior Programmer/Analyst	1-2 years 3-4 years 4+ years	\$48,300 \$60,300 \$62,800	\$50,200 \$60,800 \$63,200	\$46,400 \$51,400 \$56,300	\$48,700 \$52,700 \$57,700	\$48,300 \$56,000 \$60,300	\$54,000 \$68,000 \$66,100	\$47,300 \$54,600 \$59,500	\$54,000 \$56,300 \$61,900	\$39,200 \$47,100 \$52,000
Programmer/Analyst	1-2 years 3-4 years 4+ years	\$37,300 \$48,800 \$53,500	\$42,700 \$50,200 \$56,000	\$43,000 \$49,800 \$56,700	\$36,700 \$43,800 \$48,900	\$42,600 \$45,400 \$52,900	\$43,200 \$48,200 \$57,200	\$39,800 \$46,700 \$50,900	\$35,000 \$41,400 \$57,800	\$32,000 \$39,700 \$47,000
Computer Operator	1-2 years 3-4 years 4+ years	\$25,500 \$33,000 \$34,200	\$30,500 \$35,900 \$37,200	\$26,700 \$32,700 \$34,900	\$28,500 \$33,600 \$36,100	\$28,600 \$33,500 NA	\$31,200 \$33,500 \$36,200	\$28,800 \$33,200 \$34,000	\$27,700 \$33,800 \$37,400	\$25,500 \$30,300 \$31,400
PC Technical Support Specialist	1-2 years 3-4 years 4+ years	\$30,200 \$37,700 \$40,800	\$33,000 \$38,800 \$45,000	\$30,000 \$40,600 \$43,800	\$33,400 \$38,700 \$42,800	\$32,900 \$39,600 \$43,400	\$29,800 \$35,500 \$43,000	\$31,300 \$36,100 \$41,200	\$31,300 \$40,000 \$43,500	\$27,400 \$33,100 \$42,200

"For us, 1999 is going to be replay of last year," Baker agrees. "There are nowhere near enough people to fill the demand, and we have open positions that will be hard to fill." Among those positions are two AS/400 programmer/analyst slots.

Jim Amaral, senior vice president and CIO at the Chicago Board of Trade in Chicago, predicts that IT salaries will continue to spiral upward all year, as does Rod Fuller, IS director at R. M. Shoemaker Co., a large commercial building construction management firm in West Conshohocken, Pa.

"Programmers can jump ship and pick up substantial salary increases. And quite honestly, anybody that's got a little bit of ambition is not going to be satisfied doing technical support or simple programming. If I were in the same position, I'd be wondering how I could get to be a manager of programming or technical support," Fuller says.

Others will simply be happy if things don't get any worse this year.

"I think for us, it's more of the same in 1999," says Danny Murphy, director of IT for the city of Phoenix, which raised IT salaries approximately 8% last year to keep up with the market. "If that's the case, I'll consider myself lucky, because if we can hold the status quo, we will be doing OK."

Salary Slowdown

Some IT managers anticipate that the tight labor market will ease up a bit this year. Baker says his hope is that the supply of programmers will grow as year 2000 efforts wind down later in the year. That "could make staff a little bit more plentiful and drive salaries down a little," he says.

Others are confident that's going to happen. "I think we'll see some moderation in salary increases in 1999," predicts Rob Kogan, vice president of information systems at Nautilus Insurance Co. in Scottsdale, Ariz. "I see a lot of people pulling out of Y2K projects, and I see contractors who aren't able to

find work as fast as they did before. It takes weeks or months now, whereas six months ago it would have been only weeks—if that."

Adjusting existing IT worker salaries to match rising market salaries is becoming more common. Fuller, whose firm is an AS/400 shop with an attached Novell network, raised existing IT salaries 6% last year. But important skills got even bigger increases:

One PC technical support person got a 12% raise. "I've got to pay him to retain him. Otherwise, he'll move on," Fuller says.

Some industries, such as the health care field, are less able than others to keep up with rising IT salaries. Baker says. "We're driven by Medicare and Medicaid reimbursement, which is going down a couple of [percentage] points."

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Bonus Bonanzas

In addition to healthy base salaries, IT managers at the top are reaping large bonus packages. Here's how they compare at the top and mid-management levels:

JOB TITLE	1-5 YEARS EXPERIENCE	6-10 YEARS EXPERIENCE	11-15 YEARS EXPERIENCE	16+ YEARS EXPERIENCE
Chief information officer	\$1,000,000	\$1,500,000	\$2,000,000	\$2,500,000
Director of IS/MIS	\$400,000	\$600,000	\$800,000	\$1,000,000
Computer operations manager	\$200,000	\$300,000	\$400,000	\$500,000
LAN manager	\$20,000	\$30,000	\$40,000	\$50,000

SOURCE: SURVEY OF 1,573 NATIONAL MANAGERS, JANUARY AND FEBRUARY 1998. ALL SALARIES AND BONUS FIGURES ARE IN U.S. DOLLARS.

Los Angeles	Miami	Minneapolis/St. Paul, Minn.	New York	Philadelphia	Phoenix	St. Louis	San Diego	San Francisco	Seattle	Washington
\$122,500	\$138,200	\$170,700	\$130,400	\$71,500	\$74,000	\$45,000	\$122,900	\$131,200	\$98,300	\$123,300
\$126,900	\$156,600	\$191,500	\$101,900	\$69,750	\$85,000	\$92,200	NA	\$150,800	\$149,700	\$130,000
\$161,900	\$178,600	NA	\$169,800	\$129,700	\$106,800	\$127,500	\$137,300	\$200,300	\$146,400	\$167,700
\$82,700	\$93,700	\$84,300	\$99,000	NA	\$70,800	\$73,200	\$67,500	\$115,200	\$65,000	\$100,000
\$94,200	\$103,600	NA	\$114,400	NA	\$86,000	\$85,200	\$100,600	\$119,500	\$89,600	\$106,000
\$10,800	\$16,100	\$92,100	\$132,500	NA	\$94,800	\$99,400	\$122,600	\$127,100	\$98,000	NA
\$66,200	\$62,200	\$63,400	\$75,100	NA	\$65,700	\$53,900	\$63,100	\$83,300	\$61,500	NA
\$76,700	\$70,200	\$71,300	\$84,600	NA	\$77,100	\$64,200	\$72,900	\$92,600	\$72,700	NA
\$86,100	\$78,300	\$78,100	\$97,400	NA	\$79,700	\$70,600	\$76,400	\$101,600	\$76,800	\$83,500
\$41,800	\$64,400	\$47,500	\$68,100	\$45,300	\$47,900	\$51,900	\$52,400	\$53,400	\$48,700	\$54,000
\$49,900	\$75,400	\$55,400	\$69,000	\$57,500	\$55,900	\$56,300	\$59,900	\$55,600	\$54,600	\$55,400
\$61,300	\$64,100	\$58,900	\$76,700	\$59,900	\$63,800	\$64,500	\$64,100	\$75,000	\$63,900	\$67,600
\$48,200	\$66,200	\$61,600	\$64,200	NA	\$65,000	\$48,200	\$52,900	\$50,500	\$48,800	\$51,700
\$58,300	\$71,500	\$58,800	\$73,400	NA	\$59,800	\$59,800	\$59,900	\$47,900	\$53,600	\$55,600
\$64,500	\$84,000	\$69,400	\$82,300	\$58,000	\$68,600	\$64,900	\$64,500	\$80,200	\$62,400	\$65,200
\$62,800	\$65,200	\$48,000	\$70,800	\$57,700	\$54,200	\$56,000	\$56,900	\$69,500	\$56,000	\$63,500
\$67,000	\$71,500	\$65,700	\$75,800	\$72,900	\$61,500	\$64,300	\$73,000	\$78,500	\$62,100	\$70,400
\$77,200	\$79,300	\$72,900	\$83,000	\$76,800	\$70,900	\$68,500	\$66,700	\$89,100	\$71,400	\$72,000
\$98,500	\$67,700	\$50,100	\$69,300	\$47,600	\$48,900	\$48,800	\$57,200	\$58,900	\$61,400	\$64,600
\$65,500	\$64,400	\$64,300	\$78,000	\$64,300	\$64,000	\$56,900	\$68,900	\$69,500	\$67,000	\$68,100
\$74,200	\$72,600	\$68,300	\$88,300	\$65,600	\$61,200	\$62,200	\$72,600	\$77,100	\$66,800	\$74,800
\$54,800	\$57,300	\$46,900	\$58,400	\$45,800	\$52,400	\$50,400	\$58,000	\$61,800	\$50,700	\$58,800
\$65,900	\$67,600	\$56,300	\$77,700	\$56,200	\$66,400	\$55,100	\$65,700	\$66,700	\$56,900	\$65,000
\$69,300	\$75,400	\$67,300	\$84,900	\$60,800	\$68,000	\$56,900	\$76,900	\$77,400	\$62,300	\$76,300
\$96,400	\$63,300	\$44,500	\$63,100	\$43,400	\$49,100	\$38,300	\$53,300	\$59,800	\$47,100	\$54,400
\$70,900	\$99,600	\$54,400	\$70,700	\$49,600	\$61,700	\$46,200	\$59,000	\$66,600	\$52,300	\$69,800
\$71,700	\$66,200	\$60,900	\$80,600	\$57,800	\$58,200	\$50,900	\$62,000	\$77,300	\$60,900	\$65,000
\$42,400	\$43,200	\$38,200	\$50,400	\$39,400	\$35,600	\$27,400	\$31,600	\$47,400	\$42,400	\$42,300
\$57,200	\$48,400	\$46,000	\$57,400	\$47,500	\$44,200	\$31,800	\$46,700	\$55,400	\$47,700	\$47,800
\$59,300	\$53,000	\$52,500	\$69,700	\$48,100	\$49,700	\$35,600	\$52,500	\$68,700	\$54,300	\$64,700
\$27,400	\$32,500	\$26,800	\$34,200	\$26,300	\$28,000	\$27,400	\$26,200	\$30,800	\$30,000	\$31,100
\$36,300	\$37,100	\$33,800	\$40,700	\$33,800	\$32,800	\$31,800	\$33,800	\$36,500	\$34,500	\$37,200
\$39,700	\$40,500	\$33,800	\$45,400	\$33,800	\$39,700	\$36,600	\$39,100	\$38,300	\$37,900	\$42,400
\$33,600	\$33,700	\$31,100	\$37,200	\$27,900	\$32,800	\$31,400	\$33,000	\$35,500	\$36,200	\$37,400
\$36,300	\$40,000	\$36,100	\$45,200	\$32,300	\$40,100	\$36,600	\$37,700	\$40,500	\$40,700	\$36,700
\$44,100	\$48,300	\$40,000	\$49,000	\$36,300	\$45,500	\$40,600	\$45,600	\$49,200	\$45,600	\$47,200

SALARY SURVEY

Continued from page 55

points) a year, not up. That makes it difficult to meet a 6% to 7% annual increase in IT salaries," he says.

Some managers believe that noncash incentives — such as more time off, lower-priced medical coverage, more training and telecommuting — can be as important as salaries this year. But few dramatic, noncash initiatives are emerging. In most cases, it appears that money still talks loudest.

More Than Money

But big bucks may not lure people away from jobs they like. Fuller says he recently was contacted about a director of programming position that paid \$115,000, or \$25,000 more than he makes now. He turned it down because the job had less responsibility than his current position as IT director of a smaller firm. "If I were managing programmers all the time, I'd quickly end up being very disappointed, and I'd be out looking again," he says.

Sometimes the combination of a signing bonus and noncash benefits can make up for the lack of a high salary,

You find a lot of kids passing themselves off as heavy-duty programmers because they know a little C++, have done some Visual Basic and have worked on a PC. But most of these people don't quite know what such a position entails.

MIKE BAKER,

UNDERWOOD MEMORIAL HOSPITAL

How Are We Doing So Far?

Here's how the 1999 midyear salary numbers stack up against our 1998 Annual Salary Survey findings from six months ago:

JOB TITLE	1998 AVERAGE SALARY	1999 1-2 YEARS EXP.	1999 3-4 YEARS EXP.	1999 5+ YEARS EXP.
CIO	\$180,000	\$181,000	\$192,000	\$199,000
Director of IS	\$62,000	\$64,000	\$67,000	\$68,000
LAN manager	\$64,000	\$65,000	\$66,000	\$66,000
Network administrator	\$40,000	\$40,000	\$41,000	\$44,000
Senior systems analyst	\$50,000	\$50,000	\$50,000	\$50,000
Programmer/analyst	\$46,000	\$46,000	\$46,000	\$46,000

SOURCE: COMPUTERWORLD'S 1998 ANNUAL SURVEY & 1999 MIDYEAR SURVEY OF 527 & 400 RESPONDENTS, RESPECTIVELY. BASE SALARY FIGURES HAVE BEEN ADJUSTED TO THE SAME \$1 FLOORING.

says Michael Freeman, vice president of operations and CIO at WD-40 Co., the San Diego-based maker of the well-known household lubricant.

"We just hired an IT person for electronic commerce whose salary at his existing job was 15% above what we were willing to pay. But we used a signing bonus and benefits to hire him," he says.

The bonus is to be paid in three installments: At signing, after six months of employment and after one year on the job. The special benefit was that the California company offered, for the first time, to let a prospective employee telecommute full time — in this case from Ohio.

"Companies with good overall packages can work past salary issues if they use a little creativity," Freeman says.

Training is another noncash benefit being used in hiring. For critical skills such as SAP and PeopleSoft, the city of Phoenix has paid up to a 10% premium on salaries.

However, new employees have to sign a contract stating that if they stay for less than two years, they will reimburse the city for the cost of training they received.

Because SAP training for an individual might cost \$30,000, the reimbursement contract "had a reasonably positive effect on our ability both to attract and retain people," Murphy says.

Amaral predicts companies will give more weight to noncash incentives this year, particularly time off. He sees less potential in offering prospective employees telecommuting arrangements.

"I've not seen a lot of successes in telecommuting, although we support and encourage it for some support people who can handle a down system from home as easily as they could at the office and more quickly," he says.

Full-Time Fun

Amaral, a former contractor who turned full-time executive recently, also hopes to deal with the labor shortage by convincing more of the Chicago Board of Trade's contractors to work full time. He says it's a practical move, not just an effort to save money on high

contractor fees. "The skills we've been contracting for are those we need to continue to have. So why not hire them?" he says.

But will contractors become full-time employees? "I'm a consultant-turned-employee. You do it for the opportunity," Amaral says. The most-needed people right now are C++, Java and HTML developers and network administrators, designers and capacity planners, he says.

But many companies are being

forced into hiring more contractors, not fewer, Preski says.

"I see more and more outsourcing situations in which companies are hiring consultants because they can't hire full-time people in the marketplace," he says. "And, at the same time, the higher earning potential for contractors makes it more desirable for people to become consultants." ■

Alexander is a freelance writer in Edina, Minn.

Methodology

Computerworld conducted a survey of IT managers in our 20 top circulation markets to determine the salaries of their IT staffs, based on years of experience. Managers were asked to provide their base salary figures, additional compensation figures and turnover rates for IT personnel:

BASE SURVEY RESPONDENTS			
Total number of respondents	400		
Average number of IT employees	38		
Average number of IT employees per company	38		
BASE RESPONDENTS BY JOB TITLE			
Chief information officer:			
1-2 years of experience	88	Senior systems analyst:	124
3-4 years of experience	88	3-4 years of experience	129
4+ years of experience	220	4+ years of experience	229
Director of IS/MS:			
1-2 years of experience	110	Senior systems programmer:	113
3-4 years of experience	121	3-4 years of experience	120
4+ years of experience	278	4+ years of experience	214
Computer operations manager/OP mgr:			
1-2 years of experience	129	Senior programmer/analyst:	134
3-4 years of experience	144	3-4 years of experience	166
4+ years of experience	261	4+ years of experience	267
Network administrator/analyst:			
1-2 years of experience	152	Programmer/analyst:	181
3-4 years of experience	173	3-4 years of experience	183
4+ years of experience	267	4+ years of experience	243
LAN manager:			
1-2 years of experience	129	Computer operator:	170
3-4 years of experience	150	3-4 years of experience	167
4+ years of experience	228	4+ years of experience	232
Project manager, systems & programming:			
1-2 years of experience	162	PC technical support specialist:	200
3-4 years of experience	162	3-4 years of experience	204
4+ years of experience	271	4+ years of experience	251

SOURCE: COMPUTERWORLD'S 1998 ANNUAL SURVEY & 1999 MIDYEAR SURVEY OF 527 & 400 RESPONDENTS, RESPECTIVELY.

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SIZING UP THE BOSS

(IN YOUR JOB INTERVIEW)

So, you think it's rude or pushy to ask questions of the boss during a job interview? Boy... you'd better read on!

Information technology managers aren't just interested in your answers to their questions. They're also paying attention to the questions they expect you to ask.

By Candee Wilde

What are the questions you should put to the hiring manager that are the real killers — you know, the ones that can really make the difference in landing a job? *Computerworld* asked senior IT executives, IT consultants and recruiters that same question. Their advice: Ask questions that highlight your interest in the job, your career goals and your IT skills.

The right questions can subtly reveal that you researched the company before the interview. They'll show that you understand that IT's fundamental role is to support corporate goals.

So don't just sit back and answer questions during your next job interview. Study the following questions from our sources. Then lean forward and ask a few of your own!

Q: How is the company technologically positioned against the competition? How does the company keep employees current on new technologies?

"The first question indicates whether the candidate cares if the company is putting resources into technology to compete," says Dick Ludlum, assistant vice president of IT plans and controls at United Guaranty Corp. in Greensboro, N.C. "In the past, I was more concerned about what people knew about technology than what they knew about the company. That has changed. Interviewees who

show they understand our market and competition indicate they spent time researching the company. When a candidate asks whether we provide access to training, seminars and conferences, it shows an interest in building a career with us."

Q: How does this company help employees balance their personal and professional lives? What does it take to get ahead?

"Balance in life is important," says Ed Wojciechowski, vice president of IT at Maytag Corp. in Newton, Iowa. "Balance allows people to have a healthy lifestyle. Over the long term, people with a good work/life balance are more productive. During an interview, people need to find out what a company values in its employees. Getting ahead should be strictly performance-based. Not everyone works on the newest, most visible project. Therefore, it is important to reward people who do a great job day in and day out."

Q: How can I work with your company on, together, we can meet my career goals?

"My focus is on an individual's long-term career orientation. Career questions tell me the candidate is ready to commit to a partnership," says Mike Shebak, vice president of Kelly Information Technology Resources at Kelly Services

Inc. in Troy, Mich. "We ask candidates where they want to be six months from now and a year from now — and we ask them what they are willing to do to get there. It is a two-way street. The candidate should be willing to invest in the company by, for example, studying and adapting to different technologies."

Q: How would you describe the corporate culture and working environment here?

"We want to know if the candidate is qualified to fit our organization — but the job seeker needs to know if the organization will fit their interests or abilities," says Ramona Rutherford, director of national recruiting at Ajilon Services Inc. in King of Prussia, Pa. "Candidates who question what we have to offer are truly interested. They want to see if the organization can suit their needs."

Q: What kind of appreciation or credibility does the IT organization have in the business?

"Candidates... need to know how the company perceives information and relies on information — not information technology, but information," explains Dale Katnick.

Inc. in Troy, Mich. "We ask candidates where they want to be six months from now and a year from now — and we ask them what they are willing to do to get there. It is a two-way street. The candidate should be willing to invest in the company by, for example, studying and adapting to different technologies."

Q: Does the organization view IT as providing excellent customer service? Will I have the opportunity to work directly with customers to develop new systems?

"An IT department must understand how internal customers perceive it in order to provide good internal customer service," says Teresa Mortensen, CIO at The Finova Group Inc. in Phoenix. "Sometimes there is a disconnect between the IT group and its perception of what it provides, and the user community's perception of what IT provides. This makes it important for the IT group to find ways to measure customer satisfaction. The IT professionals who do the best are those who have a strong grasp, not only of the technology, but of the business and the company's strategy." ■

Wilde is a freelance writer in Easton, Conn. Contact her at cwilde@comcast.com.



TECHNOLOGY BRIEF

Customers use ETI•EXTRACT® to solve their complex data transformation problems

Ideal IT infrastructure product for enterprise-wide data and app integration management

ETI speeds up billing process for CableData

CableData, in Rancho Cordova, Calif., offers customer management and billing solutions to many cable providers in North America. Under the firm's subscription management service, after new customers provide data from their previous billing vendor, CableData converts it to run on its own software. This conversion process takes up to six weeks to do manually, since files can exceed millions of records.

With its competitors cutting this process to 7-10 days, CableData also had to shorten the conversion process. The company wanted to find an automated data conversion solution to streamline the process, but the situation was complicated by the fact that CableData also planned to move data from many different systems into one.

The speed of converting customer data brought the billing process to life.

As the staff researched solutions to both challenges, technical expert Vince Chastain advised director of implementations Kim Pratt to look at ETI•EXTRACT. Says Chastain, "Not once have we run into anyone at ETI—consultants, training, implementation, sales—who didn't know the answer to our questions immediately."

CableData wanted a product that would work with multiple source and output databases and would provide metadata management. The staff knew that software with its own transformation engine would add too much complexity to the process. They wanted to go directly from the source to the target. These two criteria alone eliminated all other competitors.

In weeks, the multiple systems were converted into one. ETI•EXTRACT is now a major software component in CableData's IT infrastructure.

ETI•EXTRACT helps Bank of Hawaii move data from 11 legacy applications

With Southeast Asia suffering economic woes and Hawaii's economy slowly regaining momentum, the Bank of Hawaii (BOH)—the state's largest commercial bank—wanted to be more agile in addressing customer needs. The bank knew it had to maximize the use of its data.

Kapolei, HI-based Bank of Hawaii decided to merge information from the 11 legacy applications that supported all its divisions into one data warehouse. Bank executives reasoned that building one data warehouse for all major BOH applications would be an intimidating task, but not an impossible one.

And they wanted the job done fast. The

bank's data warehousing group had less than nine months to make it happen. David Lindsey, BOH assistant VP, signed on to the task with the provision that he could use an automated data conversion solution.

But which one? His team began looking into tools that could help BOH move from VSAM/flat files to a Sun Solaris-Oracle platform. Although some of them knew that ETI•EXTRACT had the reputation of being the premiere software product, they also looked at products from Oracle, Platinum, Informatica and Prism.

Bank of Hawaii's top criteria was that the solution be a code generator. "We were under a tight deadline to get the prototype up and running before the end of the year," said Lindsey. Looking at the overall timeframe, BOH believed it would be better to

go with a software product that generated code than to rely on products using a transformation engine.

Not only would a code generator be a faster solution, but without proprietary code to deal with, BOH could easily modify code after its creation and retain comprehensive metadata about the conversion when modifying it within ETI•EXTRACT.

According to Lindsey, ETI gave his team members a comfort level they didn't find with other vendors. The ETI team observed that the bank has lots of code and lots of people who know how to write code, so, with this high level of in-house expertise, BOH staff would need little training to be

up and running with ETI•EXTRACT.

Bank of Hawaii systems consultant Rita Kaku's initial impression was that ETI•EXTRACT was

flexible and capable of handling the complexity and bulk of moving data from all 11 BOH applications into the data warehouse. The other contenders simply could not compare to ETI. Shortly after, BOH invested in ETI•EXTRACT with two data system libraries.

When all 11 applications are fully loaded and the data warehouse fully populated, Lindsey expects it to be about 500 GB in size. Currently, the prototype includes two applications that occupy 70-80 GB. With the prototype, BOH was able not only to experience ETI•EXTRACT's ease of use but also demonstrate the efficiency of the new data warehouse redesign.

Chicken producer plucks legacy data using ETI•EXTRACT

As the largest single producer of chicken products, Tyson Foods, of Springdale, AR, sells to supermarkets, restaurants, fast-food chains and even pet food makers in more than 60 countries. Because of this array of markets, the conglomerate was looking at ways to better support its customers.

Tyson Foods decided to implement a consolidated sales data warehouse to be populated from its new SAP R/3 financials system and its legacy logistics systems. The company wanted sales history, selling expenses and inventory available at the touch of a button. It also wanted to manage the customer relationship at all levels of customer service, sales and marketing. To attain these goals, Tyson decided to replace its legacy data warehouse with a web-based reporting system.

Completed and tested, 200,000 records in 10 days.
That's why ETI.

Bill Wade, director of sales information, assigned a team to find data conversion software. Says Wade, "Regarding transformation tools, ETI clearly had the mindshare of everyone, so we approached them first."

Tyson Foods had one hesitation. Most of its legacy data sat in a VAX VMS relational database that was planned for a SAP system, and ETI did not have the VAX RDB interface product in hand. But once it assured Tyson that ETI•EXTRACT could be extended to accommodate such database structures, Tyson moved forward.

In consolidating the operational data store and the old data warehouse, 200 interfaces had to be completed and tested in six months. Tyson Foods did not have the staff for such a long, single-focus project. The only solution was to manage the data migration and transformation with the software. It was estimated that it would take 30 days to complete the data system library to read the RDB database, but it took only eight days to get it going.

For more information about ETI and ETI•EXTRACT, or to request a CD on Solving Data Integration Challenges, call 1-888-384-7546 or go to www.eti.com/cs.html.



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RESCUE

The future of the American Red Cross was on the line when a court ordered an overhaul of its \$2 billion blood products business. Here's how its IT team overcame pessimism and fragmentation to complete a nationwide blood information system By Kathleen Melymuka

"MY GOD, what if the call comes and they can't ship the blood out? Somebody may lose a life." That's what keeps American Red Cross CIO Tom Woteki awake at night.

The Red Cross, a nonprofit organization that supplies blood to 20,000 people in 3,000 hospitals daily, calls itself a "business of the heart," and certainly, its mission is heartfelt. But the Red Cross' blood-products manufacturing and distribution side is also a \$2 billion business whose revenue helps fund thousands of volunteer chapters. During the past decade, the organization was faced with a technical and cultural challenge that would try any Fortune 500 company.

In the late '80s, just as the rise of managed health care was putting pressure on blood suppliers to cut costs and improve service, the discovery of the human immunodeficiency virus in the blood supply brought the Red Cross to its knees. In 1993, a federal court ordered the organization to

centralize control over its blood supply from 38 geographically dispersed and autonomous blood regions.

It was time to change or die. That change would involve the development of a standard, nationwide blood-products information system and the infrastructural, business and cultural transformation that system required. Last month, after six years and \$164 million, it was finished.

The Challenge

The 38 regions, which acted as independent pharmaceutical companies, had their own CEOs, cultures and management styles. They used 28 information technology systems to produce blood-related products through a variety of manufacturing methods. There was no common technical infrastructure, not even e-mail, and the level of automation varied significantly.

Previous efforts to merge the group had failed, leaving a residue of resistance and hostility toward change. The Red Cross needed to merge all this into one national enterprise,

and it needed to make the transformation without interrupting the around-the-clock operation.

"The challenges were like those facing many companies that need to mold autonomous business units into a single enterprise," says Woteki, who came to the Red Cross from the research division at Merck & Co. He combines a ponytailed informality with a high-powered résumé that includes a doctorate in statistics and service as the designer and lead technical engineer of the Securities and Exchange Commission's original Electronic Data Gathering, Analysis and Retrieval (EDGAR) system, which provides public access to corporate SEC filings.

Changing a 'Culture of Failure'

Woteki's biggest obstacles were cultural. The chapters had a stake in the processes and policies they had developed since World War II, and they didn't want to give them up. "Every employee knew every step in every process," says Joan Manning, CEO of the Midwest Region in Omaha.

"With a new system, it would all have to be relearned." Standardization also meant having to relinquish some control, Woteki says. For example, regional IT leaders would no longer report to their CEOs but to Deputy CIO M. Hall Gregg. "That represented a loss to the CEOs," Woteki says. "Some resisted, saying, 'You're taking all this away from us; what do we do anymore?' And the answer was, 'You run the business.'"

People fought back by clinging to what Woteki calls "a culture of failure" that had grown up around past failed efforts to

Rollled Into One

Twelve steps to a massive centralization effort, Red Cross-style:

1. Assemble a business-savvy IT leadership team.
2. Charter a committed, high-level executive sponsor.
3. Give equal time to planning and implementation.
4. Understand change management.
5. Develop a campaign to sell the changes to the business side, then take it on the road in person.
6. Rely on businesspeople for best practices and process changes.
7. Integrate your IT team with consultants as necessary.
8. Monitor progress religiously.
9. Be sure you have an early success to boost credibility and convert the uncommitted.
10. Keep your hands on the implementation. Be present and visible.
11. Examine the problems with each implementation and solve each before the next one.
12. Leverage your success in other areas of the business.

develop enterprise systems. "There was a whole lot of skepticism out in the field," he recalls. "They'd say, 'Who's kidding who? We tried this before: you guys have come and gone; it won't work. We'll never be able to do it.'"

But this time, there was a crucial difference. Jim Ross, who had just retired from a 36-year U.S. Army career with experience in worldwide logistical networks, became senior vice president of biomedical services and executive champion of the effort. "He brought leadership and a real dedica-

tion to the task, and he could not be stopped," Woteki says.

Ross' strong polar was strategic planning, which was the Red Cross' weakness. He brought in consultants, and the team studied change management in such companies as General Electric Co. Then the team put together a plan and went on the road. "We went to staff meetings in the regions, areas office meetings and CEO meetings, project manager Greggings."

"They were meant to inspire us to be excited about [the new] system," Manning says of the meetings, and though she wasn't yet ready to be a cheerleader, she did find the experience and expertise reassuring.

The team's persistence gave it enough credibility to assemble a group of Red Cross businesspeople who toured the country, documenting workflow processes, identifying best practices and planning process changes.

Meanwhile, Woteki and Gregg assembled an IT team of Red Cross employees and contractors to build a national infrastructure of wide-area networks and data centers and acquire, customize, test and implement an enterprise-scale blood products manufacturing application. Ross helped keep the project, called Manufacturing and Computer Standardization (MACS), on schedule with monthly process reviews for everyone from programmers to field people.

After nearly two years of planning, the implementation got rolling in August 1994. The team knew it needed an early success to pressure the resisters to get on board. It chose Connecticut, a tech-savvy re-



A nurse draws blood from a donor at a recent Red Cross blood drive in Raleigh, N.C.

MISSION

gion that was solidly behind the program. The region had been using the stand-alone version of the application that the IT team had chosen and scaled it up to enterprise strength. Even so, it spent 16 weeks preparing.

"It wasn't just implementation of a new system, but an entire management approach," says Stan Roberts, CEO of the Connecticut region.

Woteki and Gregg were on the scene to address the issues, such as how to change systems while providing uninterrupted services to patients in hospitals. "That required coordination of all the regions to supply red cells and platelets [and staff] to support [us during] the transformation to MACS," Roberts explains.

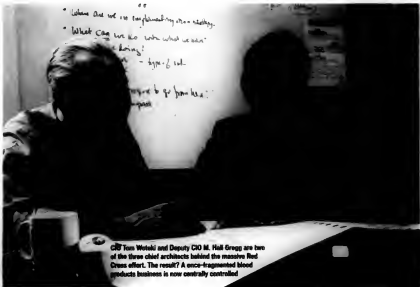
After the first implementation, the team took a 60-day break to examine the bumps in the process and figure out how to smooth them out for the other 37 regions. That approach continued, with implementations going ever more efficiently. About halfway through, even the doubters became believers.

Results

The MACS implementation has already achieved its primary goal of bringing blood processes under central control, and it has boosted efficiency in the regional offices. "The truth is, we weren't using technology very well," Manning acknowledges. "We've been able to unearth donors that had been lost in the previous system, and now we can track them better."

Because systems and procedures are standard, regions can also share employees in times of need, something they couldn't do before.

Economies of scale will also make the Red Cross a tougher contender in the competitive blood market. At Overland



CEO Tom Woteki and Deputy CEO M. Hall Gregg are two of the three chief architects behind the massive Red Cross effort. The result? A once-fragmented blood products business is now centrally controlled.

Park Regional Medical Center in Kansas, for example, Dr. Ila Peterson, director of transfusion services, saved 15% on blood products by switching from a local supplier.

And MACS can give an overview of the national blood supply that can mean having products where they're needed. That kind of reliability would make a difference to Peterson. "The Kansas City market has sophisticated blood needs for things like bone marrow transplants and trauma surgery," she says. "We need a supplier we can depend on."

MACS has enabled the Red Cross to perform more reliably during emergencies. When a hurricane knocked out power in the Mobile, Ala., region, Birmingham was able to take over processing for Mobile.

"Without MACS, those [blood] units could not have been used," says June Fletcher, CEO of the Birmingham region.

Looking Ahead

Woteki sees MACS as the backbone for a new era in technology at the Red Cross. "We've accomplished the original goal for the MACS project," he says. "Now, how do we really leverage these investments?"

Some of the answers are already apparent. Woteki has used the MACS infrastructure to support a major project to replace 12 regional financial systems with one Oracle Corp. system. Gregg is leveraging the infrastructure to replace old systems and revamp processes in the Red Cross' nine national blood-testing laboratories.

The organization has

launched a data warehousing initiative that could use information to help expand the donor-pool, forecast demand and improve customer service.

One of Woteki's biggest challenges is to educate the businesspeople about what MACS makes available. "We have some ideas, and we're trying to foster business interest," he says.

That's just the kind of thinking Ross hopes will spread throughout the Red Cross.

"We're trying to get people out of 'managing from week to week,' he says. "We're looking to the future."

Melymuka is Computerworld's senior editor, management. Contact her at kathleen.melymuka@computerworld.com.

It wasn't just implementation of a new system, but an entire management approach.

STAR ROBERTS, CEO,
CONNECTICUT REGION,
AMERICAN RED CROSS

DRIVING THE DEAL/JOE AUER

The secret software license sucker punch

DO YOU MAKE SURE all the agreements you need on a piece of equipment are solidly in place before you move ahead with a purchase? If not, you could be in for a surprise bigger than the decision in the recent Evander Holyfield/Lennox heavy-weight championship fight. You may not even see the knockout punch coming until it's too late — just like this poor buyer: A company recently bought a new high-resolution color printer. When the 90-day warranty was about to

expire, the equipment manufacturer presented a five-year maintenance agreement. The sales rep did the usual song and dance — "Oh, it's just our standard form agreement; everybody signs it" — adding the "you don't want any lapse in maintenance coverage" jab to create urgency in the customer's mind.

But here's the punch in the teeth: The license for the printer-driver software grant was in the maintenance agreement. Unless the maintenance agreement was signed, the buyer didn't have the right to use the software. And without the software, the printer was worthless.

In short, the supplier forced the unsuspecting customer to accept a multiyear maintenance agreement for equipment that probably would be obsolete long before the agreement expired. The only way to get out of the agreement was to upgrade the printer and sign a new, longer-term maintenance agreement. The supplier's strategy was to lock its customers into a never-ending equipment purchase-and-maintenance cycle.

Wiggling out of that type of death grip can be difficult, especially if you're a small company.

But if you run with the big dogs, then you can probably

leverage your way out of it.

When you buy technology, make sure the license agreement for the software is part of the purchase, not the maintenance, agreement. And negotiate a maintenance, agreement that's renewable annually at your option. But most important, make sure all agreements for the equipment are negotiated and executed at the same time — before the component is purchased and you've been trapped with no negotiating power.

Divided We Fall

Often in technology acquisition—the procurement worker-bee is given the task of

negotiating with the suppliers at the last minute — with no support, no alternatives and no time. Even when IT managers follow a sound procurement process, their own management can lock the organization into a bad deal. Many times, top executives don't even know they're doing it. Why does it happen? Because the executives let the vendor appeal to their egos.

When vendors do an end-run around the procurement team and reach executive decision-makers, they use their considerable talent for flattery to convince management that an interpersonal, undocumented relationship is what works. They'll bolster their pitch with some high-level verbal pillow talk about strategic partnering. They'll also flatter the executive into thinking that the deal can be done quickly and easily without those pesky procurement people — "You're such a tough, great negotiator; you don't need any help."

How can you head off these flanking maneuvers? In one recent outsourcing deal, the procurement team successfully thwarted an end run by a very large vendor by involving the executive early in the process and keeping him informed throughout the end-user.



Joe Auer is president of International Computer Negotiations Inc., a Winter Park, Fla., consultancy that educates users on high-tech procurement. ICM sponsors CAUSIS: The Association of High-Tech Acquisition Professionals. Contact him at jauer@icnweb.com.

Fortunately, the procurement team had warned the executive so that when the end runs occurred, the team not only countered the vendor's efforts, but even gained negotiating power.

The executive followed the script provided by the team and reprimanded the vendor, sending him back to the team and reminding him that the team had the

executive's full authority and backing. The team showed a lot of savvy and saved the company a ton of money.

Getting management buy-in and support up front is a key step to helping ensure a good negotiation process that has the chance to work — and to yield a successful deal. ■

WORKSTYLES

What It's Like To Work at... HBO

BY LESLIE ROFF

Source: Mike Dugan, senior software engineer for sales and marketing, Information Technologies group.

Company: Home Box Office (HBO), a wholly owned subsidiary of Time Warner Entertainment Co. Headquarters: In the Bronx Building — a weird, curved, old skyscraper building on West 42nd Street in New York.

IT employees: 200 total; most are in New York, with a few in a small Los Angeles office.

End users: 2,000.

How many employees get to work: Most travel.

Driver mode: Business casual. "It depends on who you are and on,

really, and the image that they expect. Fashion is a little more formal, but if you're supporting programming [the department that decides what's on TV], you can adjust the tone."

Workday: 9 A.M. to 6 p.m. Come on, Really? "People kind of roll in between 9 and 10. It's taken to schedule a meeting before 10 a.m. In IT, we don't usually get out by 6. Lately, it's been 7-ish, but on a nice day in the summer, it would be 5 p.m. On Fridays in the summer, the company closes at 3 p.m." Security guard needed? Yes. Must have your ID card to swipe at every doorway; employees use the same card at venues that offer discounts to Time Warner employees.

Kind of offices: High-walled cubicles.

Amortize: IT has a central kitchen where people bring their dinner leftovers, especially around holidays.

Bryant Park, across 42nd Street, is "the best thing to have as our corporate back yard for taking a break, eating lunch or people-watching.

And in the summer, HBO sponsors classic movies under the stars." Must people carry beepers? Call chains? "Operations people do, but developers don't." Percentage of staff that telecommute: 5%. Plus, people log in from home at night to check on jobs and review e-mail.

On-site day care? No. In-house cafeteria/food service? Yes, a cafeteria. Calendars running - 1 to 10 (best)? 2. Best menu item: Grapes. Worst menu item: Fried fish. Free refreshments: New York gets coffee, tea and hot chocolate; L.A. gets tea sodas. "The facilities wouldn't glow on spring water, so we have a Clean Drinking Water Club, and we all chip in every quarter and get Poland Springs delivered — we have a water master who organizes that."

The one thing everyone complains

about: Why is the coffee as bad — is it the water or is it the coffee itself? Where the office gossip: "What gossip?"

Little perks: Company pays for employees' cable bills; discounts or free admission to local museums; in-house gym.

Favorite machine at the gym: The bikini. They overlook Bryant Park and have small televisions attached to them.

Last perk: The annual holiday IT party that happens the same week as the corporate Christmas party. How is the IT party different from the company party? "It's in-house instead of at The Plaza, and the senior vice president plays Secret Santa — it's always fun to see if he remembers your name."

Would employees feel comfortable e-mailing the CEO? Yes. The CEO of HBO is pretty approachable.

What about the CEO of Time Warner, Gerald Levin? "I don't know his address."

Do people listen to music on CD-ROM drives? "We listen to stream-

ing audio on the Net. The new thing is MP3s. Web sites where disc jockeys spin their own records.

Any singers in the group? Yes. A lot of people here have second careers as musicians, artists or opera singers.

Quote: "It's an informal professional atmosphere. It's very close and demanding."

Can't get the right skill level	84%
Lack of candidates	27%
Can't offer competitive pay	10%
Candidates don't have experience	8%
Other	20%

SOURCE: ARI & ASSOCIATES, A GROUP INC. 1990



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TECHNOLOGY

VIRTUAL REALITY ON WALL STREET

Think you have challenges developing application interfaces? Check out the 3-D virtual trading floor that monitors operations at the New York Stock Exchange. One of the largest virtual reality environments of its kind, the floor integrates and manipulates real-time data from nine systems tracking over 3,500 stocks. **» 67**

BACKUP ON THE FLY

With rising needs for data storage and continuous computing, it's getting impossible for Windows NT shops to run traditional batch backups in off-hours with the server offline. One answer is software that backs up byte-level file changes as they occur. **» 68**

VOICE OVER IP LEAVES IT COLD

Despite vendor hype, large network architects aren't rushing to combine voice and data over LANs. Their separate voice and data networks work just fine, and they're in no rush to rip out their reliable and feature-rich private branch exchanges to run voice over LANs. **» 70**

INTEL BOOSTS CELERON SPEEDS

Trying to outflank rival AMD, Intel Corp. boosted the speed of its

fastest Celeron processor to 433 MHz. Dell, HP and Compaq are among the PC vendors planning to use the chip in their low-end PCs. **» 68**

QUICKSTUDY: DATA MINING

Kenneth L. Robb of Dick's Supermarkets tells *Computerworld* how his stores are setting up better product displays thanks to data mining tools. **» 76**

FRANK HAYES: EFFICIENT? ME?

There's a time to be efficient, but when choosing IT products sometimes the long, torturous way is best. Really. **» 75**

EXEC TECH: NET GROCERIES

Online grocery shopping is convenient, but it can be expensive and time-consuming. We look at PeaPod and Net-Grocer. **» 73**

REVIEW: APPLE'S G3

Very well-designed, speedy and priced comparably to mail-order PCs, the new funny-looking Macs will give IT oo excuses to replace them with Windows boxes. **» 68**

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CIBA'S MARCO BOMBARDIERI: *PeaPod and Net-Grocer are a bottleneck in e-commerce.*

EASING PACKET TRAFFIC JAMS

WITH THE RISE of the Internet and the need to keep systems running 24 by 7, it's not enough to just build wider network "pipes" to carry data. Network managers are beginning to use a new generation of tools that let them give higher priority, packet by packet, to the most critical applications.

78

BRIEFS



Luminate Adds Help Desk Package

Luminate Software Corp. in Redwood City, Calif., added a package aimed at help desk workers. The new ServiceDesk software can analyze user response times and identify performance bottlenecks in SAP AG's enterprise resource planning applications, Luminate said. ServiceDesk costs \$15,000. www.luminate.com

Convoy to Upgrade Data Conversion App

Convoy Corp. in Emeryville, Calif., this week plans to announce an upgrade of its data conversion software with features for sending regular information updates among applications. Version 2.0 can send data to any enterprise resource planning system, but it's had most clients to PeopleSoft Inc. applications. Pricing starts at \$32,000. www.convoy.com

Veritas Rolls Out Management Tool

Veritas Software Corp. has released Veritas Volume Manager 3.0 for online disk and storage management. According to the Mountain View, Calif., company, the software has a backup feature that lets users reconfigure logical data storage online while the data remains available to users. A new task monitoring feature enables users to replicate volume recovery speed. Pricing starts at \$2,895. www.veritas.com

XML Extension May Ease Data Exchange

Consistency, portable APIs seen as appeal

BY CAROL BLIVA

Sun Microsystems Inc.'s recently announced plan to create a Java platform extension for Extensible Markup Language (XML) could make it easier for businesses to exchange application data.

XML tags data in ways that make it readily reusable. The extension for XML — which Sun hopes will be drafted in the next three to six months — will let applications put that tagged data to use. "Java provides portable code, and XML provides portable data," said Nancy Lee, Sun's senior product manager for XML.

Right now, the nascent XML standard is just starting to hit corporate radar screens, but analysts expect that to change

this year as standards mature and more tools hit the market.

"Java is the primary language that's used to generate and manipulate XML," said Anne Thomas, an analyst at Patricia Seybold Group Inc. in Boston. "There are a number of tools available to parse and manipulate the XML. But the tools aren't the same, and there's a lot of inconsistency across the parsers."

The Java standard extension for XML will provide a consistent and portable set of application programming interfaces, Thomas said.

Through its Java Community Process, which lets other vendors participate in developing specifications, Sun plans to develop a Java extension for

XML that will provide the basic functionality to read, manipulate, generate and print XML, Lee said.

"The real value of XML is going to be business-to-business," said Bob Offutt, a vice president at Sabre Labs, the applied technology research and development unit of Sabre

Group, a travel reservations subsidiary of AMR Corp. in Fort Worth, Texas. "When you work with trading partners, right now there are wrappers to convert the legacy data into tagged XML data."

Sun's initiative will let XML become part of the application, which eliminates the need for separate applications to link data between two businesses, Offutt said. ■

FAQ: Sun's XML-on-Java Initiative

What is the Java platform standard extension for Extensible Markup Language (XML)?
An application programming interface to be developed through Sun Microsystems' Java Community Process — providing basic functionality to read, manipulate, generate and print XML in Java applications.

Why should information technology managers care? The Java extension for XML could make it easier for companies to exchange data among applications.

When will it be available? Sun hopes a draft specification will emerge in three to six months.

REAL-TIME NT BACKUP IS HERE

Eliminates need for problem-prone batch backup from NT servers

BY NANCY DILLON

ATRICE SEEBER is the information technology director at Novell Securities Corp., and he can't afford to be cavalier about network backup.

Seeber supports 56 users who manage \$2 billion in worldwide investments.

If he hadn't had the foresight to beta-test one of the first continuous backup software packages, he probably would have lost his job a few weeks ago after routine Windows NT server cleanup caused an accidental deletion of "prime portfolio information."

"We'd already gone two days without a good backup on our legacy system, so losing that information would have been very bad. The next IT director wouldn't make that same mistake," Seeber said.

The software Seeber credits with saving him, LiveVault for Windows NT, was announced

earlier this month by Marlboro, Mass.-based Network Integrity Inc. Seeber said he will soon phase out his existing network backup software,

which he declined to name, and an Apex optical drive from Pinnacle Micro Inc. in favor of LiveVault and a tape library.

After an initial full backup,

LiveVault offers continuous point-in-time replication between protected online servers and its own backup server. Because the replication sends byte-level file changes as they occur, administrators don't have to schedule repeated full backups over the network.

"Daily backups used to clobber our network," Seeber said. Nighttime batch backups were constantly plagued by media-swapping snafus, power spikes and files left open by end users, "so on a typical day, we'd rerun our backup from 8 a.m. to 10 p.m.," he said.

Seeber said LiveVault lets him spread the backup load over a longer period, reducing impact on the network. And he said it e-mails him with status reports and has an archival file system that keeps track of data — whether it's online, in the tape library or off-site. LiveVault's Explorer-with-a-clock interface is what Seeber said helped him "slice back" to the point just before that recent deletion of portfolio data.

LiveVault, available now, costs \$2,000 per protected server and \$3,000 for the Live-

Vault storage server.

Analysts said LiveVault is ahead of the market with its technology integration.

"At this point in time, customers can use hardware- or software-based point-in-time replication products in combination with different backup products to get versioning to tape and continuous replication," said Mark Nicolette, an analyst at Gartner Group Inc. in Stamford, Conn. "But this would require a considerable amount of integration work on the part of the user."

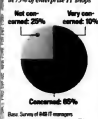
"If it's the end of the day and I could tell users I could get files back from two hours ago (as opposed to from the night before), they'd be jumping for joy," said Gordon Mills, network administrator at Petroleum Helicopters Inc., an aviation company in Lafayette, La.

Mills currently uses Backup Exec from Seagate Technology Inc. in Scotts Valley, Calif. He has Backup Exec's OpenFile Option for Windows NT, which can back up open files. But with only 27 GB of NT data, he said he's not yet ready to undertake integration of Backup Exec with Seagate's replication software, which Seagate buys from Network Integrity.

Seagate announced a version of its Open File Option for NetWare last week. ■

Major Concern

The growth of Windows NT data has created backup worry in 75% of enterprise IT shops



VIRTUAL REALITY TRADING FLOOR ADDS NEW DIMENSION

Big Board uses complex 3-D technology to synthesize stock data, interpret activity and quickly identify potential problems

BY JAIKUMAR VIJAYAN

THE RECENTLY introduced, three-dimensional trading floor at the New York Stock Exchange (NYSE) is its new theater of operations — in more ways than one.

As a hub monitoring the myriad operations at one of the world's busiest exchanges, the virtual floor is a vital decision-support center for the NYSE's business and technical staff.

As a highly sophisticated, computer-generated visual representation of trading operations at the exchange, the 3-D trading floor (3DTF) is one of the largest virtual reality environments of its kind.

"It gives us the ability to synthesize a large amount of data and present it in a way where you can make decisions and respond to situations in a much more timely manner," said Anne Allen, the NYSE's senior vice president of floor operations.

Deployed near the physical trading floor, the 3DTF inte-

grates and manipulates real-time data — captured from nine different systems — and transforms it into displays that use 3-D effects, animation and geometric shapes. In addition, the system can work with

Brown Associates in Port Chester, N.Y. Part of the reason is its technological complexity, but also "no one has really demonstrated the value proposition of this sort of information so far," Weiss said.

The 3DTF — which went live early this month — is part of a newly renovated NYSE trading-floor operations center that consolidates, monitors and interprets business and systems activity across the exchange.

A bank of nine 25-in. monitors displays the 3-D images and alerts users to any unusual trading or systems activities. Sophisticated 3-D visualization software lets floor managers quickly identify, investigate and interpret specific business or system events.

For instance, more than 50 activities and events relating to specific stocks, such as net price changes, net percentage changes, price spreads and block trades, are monitored on the 3DTF. If any of those events crosses predefined thresholds, automatic alarms

The challenge... was in building the 3-D interface.

DROR SEGAL,
SECURITIES INDUSTRY
AUTOMATION CORP.

live and recorded video feeds from the exchange's broadcast center.

Virtual reality interfaces of that kind — especially those that rely on real-time data feeds — are still a rarity, said Greg Weiss, an analyst at D. H.



THE TRADING FLOOR OPERATIONS CENTER tracks more than 3,500 stocks

notify trading-floor managers to quickly drill down into the trading area or stock in question to find out what's going on.

Similarly, 3-D images and correlation software let users quickly compare events and activities on the 3,500 to 3,800 stocks, with an average share volume of 804 million shares, that are traded daily on the exchange.

"The challenge was not so much in bringing the information together as it was in building the 3-D interface," said Dror Segal, senior director of new technologies at Securities Industry Automation Corp. The company is the lead systems integrator and the project manager of the 3DTF.

A New York-based architectural firm, Asymptote Architecture, designed the virtual environment in an unusual attempt to make the 3-D model as close to a modern trading floor as possible.

Asymptote used Virtual Reality Modeling Language and computer-aided design software, such as Alias Research Inc.'s WaveFront, to handle the lighting, color and texture of the virtual environment.

Animation code was also used as well as simulation and training software from Real Time Synthesized Entertainment Technology in Shesha, Israel.

The entire system is hosted

on a complex of four Silicon Graphics Inc. (SGI) RISC-based Unix supercomputers and SGI's Iris Performer visualization software. ■

3DTF Builders' Roll Call

Companies involved in the 3-D trading floor project at the New York Stock Exchange included:

PROJECT LEADERS

- **NYSE:** Responsible for the concept and development of the 3DTF.
- **Securities Industry Automation Corp.:** Led in creating and developing real-time 3-D trading-floor model and software application.

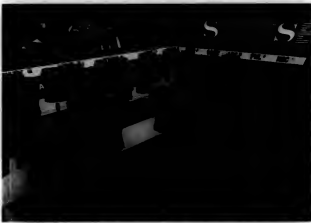
VENDORS

- **Asymptote Architecture:** Designed and managed computer-generated architectural environment and the advanced trading-floor operations center.
- **RT-DEY:** Wrote animation code for the 3DTF virtual environment.

- **Silicon Graphics Inc.:** Provided Unix2 visualization supercomputers and its Performer software.

ALSO INVOLVED

- **Pinchot, Miley/Gubin, Morse David International Inc.**



THE 3-D TRADING FLOOR captures real-time data from nine systems as well as video feeds to monitor trading activity

BRIEFS

Handheld Usage

Are handheld computers in use at your company?

StorageTek
Video Manager

Storage Technology Corp. announced last week the Media Management Network Appliance, a system for managing corporate video assets. The appliance lets organizations capture, catalog and archive video footage via a Web-based or Windows client. An entry-level system supports more than 1,000 hours of VHS-image-quality videos, according to Louisville, Colo.-based StorageTek. Pricing for the system starts at \$350,000. www.storage.com

Ruggedized Notebook

Panasonic Personal Computer Co. has announced a "rugged" notebook PC with a magnesium alloy case and shock-dampened hard disk drive. The Windows-based Toughbook 33 weighs 2.6 pounds. It includes a 200-MHz Pentium processor from Intel Corp., a 60-MHz disk drive and an 8.4-in. color display with touch-screen functionality.

The notebook costs \$1,999. www.panasonic.com

Casio Updates PDA

Casio Inc. will ship the latest version of its CasioPalm palm-size PC, the E-15, starting in April. According to the Dover, N.J., company, the new CasioPalm E-15 includes the Windows CE operating system from Microsoft Corp., a 60-MHz microprocessor, 32M bytes of memory, an earphone jack and a microphone/speaker. The E-15 costs \$399. www.casio.com

THE POWER MAC G3:
SPEEDY, EXPANDABLE

Review: Price cuts give IT no reason to replace Macs with Wintel boxes

BY GALE GRUMAN

AFTER SEVERAL years searching for an identity, Apple Computer Inc. has returned to its roots of simplicity and elegance. The new Power Macintosh G3 towers come in an absurdly easy-to-open case—lift a lever, pull down the side and all the components are easily accessible.

Inside are three standard Peripheral Component Interconnect (PCI) slots, a 66-MHz PCI slot (equivalent to an Accelerated Graphics Port slot in a PC) with a 16M-byte video card installed and a modem connector (again proprietary).

Also included are two integrated drive electronics (IDE) connectors for hard disk, CD-ROM or DVD-ROM (a format that runs digital video discs), optional Zip drive and four RAM slots (one taken).

Because the modem is unique to Apple, spend the extra \$100 and get one preinstalled. Ditto on the \$300 Zip drive.

The system supports up to three SCSI hard drives for two IDE, plus an IDE CD-ROM or DVD-ROM drive and an IDE Zip drive. There's no floppy drive: Your only option is an external, third-party Universal Serial Bus (USB) floppy drive (\$100) or USB SuperDrive (\$150), which can read and write standard floppies and 120M-byte LS-120 disks.

In addition to USB and Firewire ports on the outside, you will find an Apple Desktop Bus port for standard Macintosh keyboards and mice. There's no serial port for external modems, but you can buy third-party serial-to-USB converters for about \$80 — no bargain compared to a \$100 internal modem.

Trips

The USB pucklike mouse and a notebook-size keyboard were seemingly created for the hands of a 5-year-old and are very awkward. Fortunately, adult-size USB mice and keyboards are available from companies such as Logitech Inc.

Apple has done little to

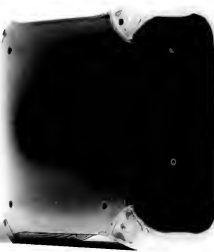
boost real-world performance, despite increasing the bus speed from 66 to 100 MHz. The fast video card will be noticed mostly by gamers and 3-D renderers. The G3, however, plays in Apple's traditional space for marketing, publishing and creative services; as a workstation; or as a file or intranet server.

Improvements

Apple has finally gotten its prices on par with PCs. A comparably equipped Dell Computer Corp. model was just \$30 less than the G3 I tested.

If you need a monitor, get the \$500 17-in. model that Apple offers. It's gorgeous — both the case and the screen. But its legs won't fit on most monitor stands, so adjusting the height will be difficult.

The G3 tower will ultimately simplify your technology management but will cause transition headaches. They're easily solvable because of the cheap SCSI option (\$50) and availability of adapters or inexpensive add-ons such as floppy drives. ▀



GRADE
POWER MACINTOSH G3
Apple Computer Inc.
Cupertino, Calif.
(408) 996-3000
www.apple.com

TEST
\$1,499 (400-MHz model with 9G-byte Ultra SCSI drive, 128M bytes of RAM and 17-in. monitor; no modem or Zip drive).

PRO Easy to upgrade and maintain; lots more expansion slots than previous models.

CON No floppy, no expansion bays for internal removable-media drives; requires external SCSI card to use SCSI drive; needs poorly designed mouse and keyboard.

B+

BY JAMES NICCOLAI

Intel Corp. increased the speed of its fastest Celeron processor to 433 MHz last week, as customers continue to benefit from the battle for the low end of the PC market between Intel and its chief rival, Advanced Micro Devices Inc.

Dell Computer Corp., Hewlett-Packard Co., Gateway and Compaq Computer Corp. are among the vendors that in-

nounced desktop PCs based on the new Celeron. The systems range in price from approximately \$900 to \$1,200.

The 433-MHz Celeron wasn't due for another three months, but Intel brought the release forward as part of an aggressive effort to win back sales from AMD in the low-end desktop PC market, said Ron Peck, director of value desktop marketing at Intel.

By midyear, Intel will crank up the speed of the Celeron another notch, Peck said.

The company also plans to introduce a new chip set, code-named Whitney, which includes an integrated graphics chip and was designed to help manufacturers further reduce the costs of low-end systems. ▀

Niccolai writes for the IDG News Service in San Francisco.



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BRIEFS

Where Security Is Hurting

Losses by type of attack or misuse (in millions):

- \$42.5 Proprietary information theft
- \$39.7 Financial fraud
- \$13.0 Laptop theft
- \$7.6 Insider abuse of Internet access
- \$5.3 Computer viruses

From Survey of 160 IT security managers

SOURCE: IBM CORPORATION, FINANCIAL AND SECURITY SURVEY, A COMPTON FOR SECURITY INSTITUTE SURVEILLANCE

New Version of Firewall Appliance

Technologic Inc. has released Interceptor 4.0, an appliance for firewall protection and secure remote-user access.

According to the Atlanta company, the appliance has new activity-reporting capabilities and an antispam option. The new version includes built-in routing so it can be plugged directly to its analog or integrated Services Digital Network (ISDN) phone line. No separate router is needed.

Pricing starts at \$3,745 for unlimited users.

www.technologic.com

Intelligent Remote ISDN Access

Aspic Advanced Communications Technologies has announced Intelligent Remote Access Client for ISDN, software that automates dial-up connectivity.

The software simplifies manual dialing procedures by letting remote users connect to a network or the Internet with a single click of the mouse, according to the Marlborough company. It was designed to minimize ISDN calling costs through management of connection durations. Compatibility with Microsoft Corp.'s Remote Access Server is included.

Pricing starts at \$119 for a single user and ranges to \$5,899 for a 100-user version.

www.aspic.com

VOICE OVER LANs: MUCH ADO ABOUT NOTHING?

For now, IT managers are skeptical

BY BOB WALLACE

NETWORK managers at several large U.S. corporations have cut through the vendor hype surrounding voice over LANs — and see problems, not promise.

That's because big companies already have separate internal voice and data networks built on different technologies and would have to replace very reliable, feature-rich private branch exchanges (PBX) to run voice over LANs.

Although convergence on the wide-area network is a popular way to cut costs, several users don't see similar LAN savings.

"It's all hype. It's hard to find a reason for running voice over a LAN," said Robert McKenna,

director of global communications at Campbell Soup Co. in Camden, N.J. The PBX at corporate headquarters will be paid for in December. McKenna will replace it with another at traditional PBX under a five-year deal, citing high reliability and performance.

"You can't say convergence would be cheaper because users already have LAN and phone systems, which means there's nothing to be saved but more to be spent," said Tom Nolle, president of CIMI Corp., a consultancy in Voorhees, N.J.

Convergence advocate Cisco Systems Inc. in San Jose, Calif., says large users will want to

move to voice over LANs in the next 12 to 18 months. Cisco plans to ship an IP telephony system in six to eight weeks. Initially, it will support up to 100 seats, hundreds by year's end and tens of thousands by 2000, said Byron Henderson, director of marketing at Cisco's enterprise business unit.

But Henderson acknowledged that "large users are looking for applications beyond replicating today's voice network." These would include unified messaging and multimedia conferencing, which will really drive convergence,



"IT'S ALL HYPE," says Campbell Soup Co. Robert McKenna

he said.

"Convergence is not for us because there's really no payback for running voice over

LANs," said Jim Fey, director of strategic technologies at PMI Mortgage Insurance Co. in San Francisco.

Fey is satisfied with the reliability and performance of PMI's in-building voice and data networks.

"We've already invested in infrastructure, so why mess with it? And we're not tearing anything out," he said.

George Mattiello, senior vice president of capacity planning at First Union Corp. in Charlotte, N.C., said, "the wiring is already in place. Convergence inside buildings is going to be a real tough sell because it's a question of economics, not [a question of] a technology sell."

MORE ONLINE

For resources related to network convergence, Internet telephony and voice over IP, visit our Web site: www.computerworld.com/more

Load Testing Helps Avert Web Crashes

Tools help IT locate weak points before their customers do

BY DAVID ORENSTEIN

Transaction-heavy electronic-commerce and intranet applications have become critical, so developers have begun to invest in load-testing tools to ensure that they can find problems before customers and end users do.

Countrywide Home Loans Inc., a Los Angeles-based mortgage and financial services provider, began using a Web load-testing tool in November. The Prudential Insurance Company of America in Newark, N.J., began testing Web applications a year ago and is now testing some of its largest applications. Nordstrom Inc., the Seattle department store chain, began load testing a few weeks ago as part of an overhaul of its site.

Before they used such tools, businesses waited for signs of stress while the applications ran and then tried to react in time. That's risky because cus-

tomers can become angered by the slowdowns or crashes and turn to competitors.

"Not as many people are doing it as probably should be," said Dick Heinman, an analyst at International Data Corp. in Framingham, Mass. Because electronic commerce is still in its infancy at many companies, he said, Web-based applications haven't yet been subjected to the same quality assurance tests as traditional client/server applications. But users of load-testing tools say the benefits are invaluable.

At Countrywide, developers use E-load from Watertown, Mass.-based RSW Software Inc. to determine when to add servers and how to load-balance their application servers, said Keith Cleveland, vice president of enterprise application services. Using three Compaq Computer Corp. RSOR servers with dual 400-MHz processors and more

than 500M bytes of RAM, testers can simulate 500 concurrent users.

Some of Countrywide's sites handle a million hits per day, and many of the visits involve transactions that stress security and back-end data systems, Cleveland said. The simulated users follow elaborate scripts that developers prepare.

Prudential will soon begin load-testing an application that allows all employees to view their paycheck status online. In a worst-case scenario, the new application could subject the site to a whopping 50,000 concurrent users, said Monica Smith, manager of the company's performance testing lab.

The company's testing tool, PerformanceStudio from Cupertino, Calif.-based Rational Software Inc., will provide important information, but trained personnel must structure the tests and evaluate the results, Smith said. ■

Company	Tool	Price
CompuLink Corp.	QALoad 4.4	Not available
Mercury Interactive	LoadRunner 5.0	Starts at \$40,000
Microsoft Corp.	Home	Free download
Radway Software Inc.	WebLoad 3.0	\$4,000 for 100 simulated users
Rational Software Corp.	Performance Studio 1.0	\$10,000
RSW Software Inc.	E-Load 1.0	\$18,950 for 100 simulated users
Segan Software Inc.	SitePerformer 2.1	\$50,000 for 250 simulated users

WHAT DOES IT TAKE TO MAKE SOFTWARE DEVELOPMENT MORE PRODUCTIVE?

Computerworld finds that users prefer StarTeam® collaborative development from StarBase.

In their April 6, 1998 issue, Computerworld asked StarTeam users and version control software users to discuss product capabilities and potential. The results speak for themselves:

- "I got more done in one day with StarTeam than I did in two weeks with the other products we evaluated."
- "Part of StarTeam's beauty is that all of its functions are integrated under one interface."
- "As more nondevelopers take integral roles in the development life cycle, ease of use becomes critical...The makers of StarTeam know this, and it shows in the interface, users say."

StarTeam encourages collaboration with features such as **Location Transparency**, so team members can access any type of file, from wherever they are. Use our Windows client, our Java client or your browser across LANs, WANs, the Web or the Internet. **Visual Configurations** eliminate the error-prone, time-consuming

You gotta have teamwork

Eight users of two different types of team development/configuration management tools report: The products have some challenges but are essential to a smoothly developed process.

Subject: StarTeam

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THE FUTURE OF TEAM PRODUCTIVITY IS HERE.

WordPerfect's Suite Deal

Upgrading to Corel's WordPerfect Office 2000 is a no-brainer for WordPerfect users — but less likely for others

BY HOWARD MILLMAN

IF YOU'RE ALREADY using WordPerfect, the excellent productivity and integration enhancements in Corel Corp.'s forthcoming WordPerfect Office 2000 are worth the upgrade. But they're probably not enough to justify a switch from Microsoft Corp.'s Office suite.

The latest WordPerfect suite, due to ship in late May, boasts a few real enhancements, such as RealTime Preview, an innovative, on-the-fly formatting tool that lets you see the full effect of formatting changes before you make them permanent. In addition to saving even experienced users some time, this toe-in-the-water feature slightly flattens the learning curve.

AutoScroll, another new ease-of-use feature, simplifies scrolling through lengthy documents. Similar in concept to Microsoft's IntelliMouse, this software-based tool is an alternative to using the scroll bar and provides better control over scrolling functions.

The inclusion of Java Database Connectivity and support for the Extensible Markup Language and Microsoft's Visual Basic 6.0 will ease — and encourage — integration with other applications, such as back-end databases (including Corel's Paradox), and the building of browser-independent Web pages.

To maintain its focus on open standards, which is one way Corel differentiates itself from Microsoft's proprietary application strategy, Corel will continue to support Object Database Connectivity (ODBC) and Standard Generalized Markup Language.

Trellix 2.0, a client-side add-on, automatically converts standard documents into HTML format, the programming language used on an intranet or Web site. Trellix lets users publish documents directly to the Web or an in-

tranet from WordPerfect Office 2000's file menu without any knowledge of HTML. Web-site design and document management strategies.

Corel still offers NetPerfect, a server-side and file-format-independent application that lets information technology managers publish documents to the Web or an intranet.

Corel's Distribute tool lets systems administrators automate rollouts or upgrades of WordPerfect Office 2000 installations from a central network server. Administrators can create individual or group configurations.

The suite retains Reveal Codes, its under-the-hood formatting code system. A first-rate, powerful formatting tool in the hands of an experienced user, it's a feature I'd like to see added to Microsoft Word.

The slimmed-down Corel WordPerfect has gotten a facelift in

the new suite. Although it lacks some of the advanced features found in Microsoft's Outlook, such as collaboration and e-mail, CorelCentral's personal information manager remains the easier of the two to use. CorelCentral doesn't include an e-mail client, but its address book integrates with Messaging Application Programming Interface-compliant applications such as Lotus Development Corp.'s Notes.

PalmPilot synchronization will be available when the suite ships.

WordPerfect Office 2000's enhanced file-conversion capabilities simplify document conversions among WordPerfect, Word Pro and Word document formats.

Indeed, the .doc to .wpd conversion worked every time. Corel says the same high degree of file-format compatibility exists between Quattro Pro and Microsoft's Excel, including macros, as well as between Presentations and Microsoft's PowerPoint.

There are many smaller changes. For example, Quattro

Pro and Presentations both sport a new Property Bar for modifying objects. And Presentations' Internet Publisher now converts presentations into slides suitable for mounting on a Web site.

Corel has brought Paradox fully into the WordPerfect fold by improving its integration into the suite. The database can now import and export to and from WordPerfect, Quattro Pro and other ODBC-compliant databases. And it also has an updated interface that gives it a more Windows-like look and feel.

Users who slice and dice their spreadsheet data into multidimensional views will find Quattro Pro's improved CrossTab feature easier to use. Both CrossTab and Microsoft's equivalent in Excel, Pivot Tables, provide advanced data analysis functions in the hands of experienced users. ■

Millman operates the Data System Service Group LLC, a consultancy in Croton, N.Y. He can be reached at (914) 274-6883 or hmillman@ibm.net.

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WordPerfect's NEW RealTime Preview

Scrolling through texts in RealTime Preview mode shows how text will change both in highlighted areas and in a preview window.

The new WordPerfect maintains a drop-down list of recently used fonts.

RealTime Preview shows users what formatting changes will look like before they're actually made.

AutoScroll lets users page quickly through lengthy documents.

The backlight s

WordPerfect 9.0: \Applications\9.0\9999...photo edit\mhw\mhw screen.wpd

File Edit View Insert Format Tools Windows Help

Font: Franklin Gothic Demi Cond, Franklin Gothic Heavy, Franklin Gothic Medium, Franklin Gothic Medium Cond, Freestyle Script, French Script MT, Futaba LI BT, Futaba RGB BT, Futaba RGB BT, FutabaBlack BT, Garamond, Lig, Gill Sans MT, Gill Sans MT Condensed, Gill Sans MT Ext Condensed B, Gill Sans Ultra Bold

16 (None) Cycles/second

(\$369) updates the Palm III's too-dark liquid crystal display with a more brightly contrasted and clearer screen that has a yellowish cast to the original greenish gray. The backlight still isn't as bright as I'd like, but when you switch it on the display changes to a dark background, which is more readable. Also, the IIx comes with 4 Mbytes of RAM, which is a nice complement. Overall, the Palm IIIx

Cybergroceries: Not in the Bag Yet

BY CATHEEN GAGNE

MY FIRST FORAY into online grocery shopping was at 1 o'clock one wintry morning when my daughter had a 104-degree fever and I had only enough medicine to get her through the night. I also had no food in the house. Here was my chance to give a local online grocery program (I picked PeaPod Inc.) a real-world test. Groceries were on my doorstep at 9:00 the same morning—a godsend in that scenario.

For busy executives, that type of service can be invaluable. You don't have to wait in lines, you don't have to schlepp bags from the trunk to the house, and if you have children...

WATCH OUT
for delivery fees. Some sites list fees as low as \$2.50 per order, but some national giant \$24 for a \$35 order.

...need I say more? You visit a Web site, "browse" the food aisles and go to "checkout." You can even create a customized shopping list. When Computer-world staff members tried a couple of services, we discovered the downside: You give up a lot of control. For example, you can't pluck the choicest bunch of grapes or eyeball the perfect roast. You also can't always be sure that you're getting the best deals at the online site. And if you carefully check your list against the actual grocery receipt, you're suddenly investing a ton of time.

Another thing to watch for are delivery fees, which vary from grocer to grocer. The cheapest delivery fees we found were at Pink Dot and YourGrocer.com LLC. The reviewer who tested NetGrocer Inc. found the shipping fees to be outrageous.

According to a recent report from EMarketer, a market analysis firm in New York, online shopping will be slow to catch on because of "entrenched consumer shopping patterns, the need for tactile interaction with food items and the logistical problems associated with starting an online

grocery." The firm estimates that by 2000, online groceries will account for 2% of the U.S. total. But by 2002, EMarketer estimates that 15% to 20% of U.S. households will be using online grocery services.

Two Computer-world staff members tested two different services. We weren't wowed by PeaPod or NetGrocer, but we could see the benefits of the services. The following is a sampling of other online grocers we came across.

ShopLink Inc.: Services such as video rental, dry cleaning and shoe repair are available in select Massachusetts suburbs. (www.shoplink.com)

Streamline Inc.: Also based in Massachusetts, this online grocer will set up a refrigerator in your garage as part of a monthly delivery fee. The service is available in limited areas of the state. (www.streamline.com)

YourGrocer: This service is available to residents living in Manhattan, Westchester County and Rockland County in New York and southern Fairfield County in Connecticut. The delivery charge is \$5. (www.yourgrocer.com)

Pink Dot: Serves the Greater Los Angeles area. It claims to deliver your order in 30 minutes or less, and it charges \$2.99 to process and deliver the order. (www.pinkdot.com)

PeaPod Inc.

Peapod.com

Pricing: \$15 per order, or \$4.95 per order plus 5% of your grocery bill.

Available in eight metro areas: My first experience with PeaPod was great. Not only did it help me out of a major bind, but I found the site easy to navigate and also easy to place an order. The only aspect I found disappointing was that I couldn't drill down to the fat content, calories and sodium levels. I'm very health-conscious, so that information is crucial. But all ingredient information was available two months later when I placed my second order.

I was prepared to be disappointed with the produce I had ordered. I'm pretty picky. Though I was pleased with the selection in my first order, I wasn't so pleased with my second order: The grapes were brown and soft, and the oranges were green. But returning the produce would have been more trouble than it was worth.

Another concern I had about online shopping was that I might be ripped off. When I analyzed my second online order against the receipt given to me on delivery, I saw I was charged a higher price for a few items such as grapefruit juice and

orange juice. On the other hand, the online shopping site didn't always indicate items that were on sale, so I ended up with a few sale items that I didn't expect. In the end, it balanced out. But it was time-consuming to do that analysis.

The bottom line? It's a trade-off. You get what you pay for. If you just don't have time to shop and aren't much of a bargain shopper to begin with, this avenue is a time-saver. But for me, it turned out to be a time-consuming ordeal.

- Cathleen Gagne

NetGrocer Inc.

NetGrocer.com

Pricing: Federal Express Corp. shipping rates are broken down by three zones and by price of your order. For example, if you live in Zone 1, which is the Northeast, your delivery fee for an order less than \$60 is \$5.99. But if you live in Zone 3, which comprises the Midwest and the West Coast, you pay \$13.99 for the same order.

NetGrocer offers a limited selection of packaged goods—including cereals, canned soup, boxed milk and toothpaste—that isn't enough to rely on as a main grocer. Nothing fresh or frozen and not even some expected packaged goods like bottled water. And the more varied your tastes, the less you will find in NetGrocer, which usually

offers just a few brands of any item and the most common flavors or varieties. It's similar to a corner grocery's or convenience store's offerings. And there were several items—such as deodorant, tomato sauce, cat food, coffee and toothpaste—I wanted to get but didn't because the brands or flavors I wanted weren't available.

Your diet will get boring very fast. But what if you've been on the road and need to order items as you're not starving when you get home? NetGrocer can serve in a pinch here, but it's at a high price. For example, I ordered \$75 worth of items—cereal, soup and sandwich bags—on a Wednesday night when I was in Palm Springs, Calif., but paid nearly \$14 for shipping to my home in San Francisco.

The Web site told me to expect delivery—which I was able to specify to be left at my door without a signature—by the following Monday; the packages actually arrived earlier, on Friday. That seemed like a long time to get something delivered from an immediate medium like the Web—and I was disappointed that I couldn't schedule delivery. It would be easier to call a local grocer that delivers and get the items that day or the next day. NetGrocer isn't terribly useful. Even if your tastes are generic enough to match NetGrocer's selection, there are too many fresh items you will need to get at a store anyhow, so it's doubtful you'll save any time with NetGrocer. NetGrocer's prices range from a little expensive to close to sales prices. The range is wide, so you should shop carefully, just as you would at a real-world store. But because of the high shipping costs, you'll end up spending a lot more money. - Elaine Drusne



Dead Set Against SET?

The once-ballyhooed online transaction standard has foundered in the U.S.

BY CYNTHIA MORGAN

WHEN MASTERCARD and Visa announced the Secure Electronic Transaction (SET) specification for online credit-card payments in 1996, experts hailed it as the electronic-commerce business' protection against Internet fraud. The specification has the blessings of many major players in electronic-commerce software, such as Microsoft Corp., IBM, CyberSource Corp. and CyberCash Inc. And it has enjoyed some success in Europe and Asia.

But even with online credit-card transactions at an all-time high, SET is way off the radar screens of most U.S. information technology managers. Even proponents see only limited U.S. adoption of SET by the end of 2000.

So why hasn't SET caught on?

According to industry experts, the reasons are as many and varied as the businesses SET was designed to serve:

- Banks don't pay for online credit-card fraud; merchants do, and they lack incentives to push SET.
- The year 2000 is a far bigger threat to most banks than fraud. "That's where most of the financial sector's IT money has been going the past two years," says SET proponent Alan Clark, who works in the IBM Software Group.
- SET's debut was a massive maximum security version. "Customers took one look and said, 'forget it,'" Clark says. As a result, he adds, U.S. electronic-commerce players view SET as overblown and far too expensive.

- Rather than be left behind in the electronic-commerce gold rush, credit-card associations quietly relaxed SET-mandated security requirements in favor of milder schemes, association insiders say.
- Rival digital cash initiatives — a major impetus behind SET's original optimistic timetables — have yet to take firm hold, in part because credit-card associations have moved aggressively to neutralize potential competitors.

- Merchants are trying to attract online customers, not turn them away with complex security systems, says Bill Burnham, an electronic-commerce analyst at Credit Suisse First Boston Corp. in San Francisco.
- Even massive online fraud has little impact on overall corporate finances, because electronic commerce is at best a minor source of revenue for established U.S. corporations.

- SET arrived too late for many Internet merchants, who have been forced to adopt their own, highly individual, methods of protection (CW, March 8, page 71).

- Electronic commerce is seen as a way to cut the costs of doing business. Proposals for costly SET security measures rarely make it into IT budgets.

"From an engineering standpoint, SET is beautiful," Burnham says. "From a real-world standpoint, it's too expensive, too slow, too fixed — it's usually installed on the customer's hard drive so he can't move from machine to machine with it — and no one right now is willing to pay for it."

Overkill?

"For most people, SET is a nuclear warhead for a problem that may only need a cruise missile," says Barbara Smiley, research director at Meriden Research Inc. in Newton, Mass.

Nearly all U.S. online commerce sites that offer secure transactions rely on Netscape Communications Corp.'s Secure Sockets Layer (SSL). SSL secures data being transmitted using a public-key encryption scheme.

When a customer requests an SSL transaction, the commerce server sends him a digital certificate; a limited-time message with the server's public key and other identification. The customer's browser uses that key to encrypt a "master key" and returns it to the server, which uses the master key to authenticate the credit-card data.

Few deny that SSL has been effective in



From an engineering standpoint, SET is beautiful. From a real-world standpoint, it's too expensive, too slow, too fixed.

BILL BURNHAM, ELECTRONIC-COMMERCE ANALYST, CREDIT SUISSE FIRST BOSTON CORP.

curbing electronic eavesdroppers. But it does little to authenticate the people on either side of the transaction. SET proves not only that both parties are who they say they are but that they made the transaction at a particular time.

SET relies on a series of interdependent digital certificates to validate four basic components. A cardholder wallet installed on the customer's computer authenticates his end of the transaction, while the merchant server accepts transactions and forwards them to the payment gateway.

The gateway processes those transactions and sends them over private financial networks to banks. One or more certificate authorities issue and maintain digital certificates.

Turning away customers who lack SET's digital wallets has been a key obstacle for merchants. But IBM's Clark says newer wallet schemes have evolved that follow the model banks use today to activate credit cards.

European companies are far more enthusiastic about SET adoption; the need to do business in Europe may push U.S. companies to follow suit. In Europe, the need for online security is more obvious, according to Clark. "If the U.S. was 50 countries instead of 50 states, and every country made its own laws, [we'd] develop ways to prove identities electronically."

What SET really needs is "some huge credit-card disaster that costs customers, banks and merchants a lot of money and grabs our attention," Smiley says. "Otherwise, it'll remain a hard sell in the U.S." ■

Morgan is Computerworld's technology evaluations editor. Her Internet address is cynthia_morgan@computerworld.com.

SET BASICS

What: The Secure Electronic Transaction (SET) specification is an open network payment-card protocol.

Who: The consortium behind SET, SET LLC, was spearheaded by Visa International Inc. and MasterCard International Inc.

When: SET LLC was founded in 1996. The SET 1.0 standard was released in May 1997; SET 2.0 is coming next year.

Why: To drastically reduce credit-card fraud.

BRIEFS

Office 95 Now
Y2K-Compliant

Microsoft Corp. has released a set of patches that the company said make Office 95 completely year 2000-compliant. Previously, the suite was classified as "compliant with minor issues."

The patch can be found at: <http://officeupdate.microsoft.com/articles/ofy95fixsheet.htm>

IBM WebSphere
Upgrade

IBM has released Version 2.0 of its WebSphere Performance Pack, a set of tools designed to increase the scalability and manageability of its WebSphere Application Server.

The product costs \$7,500 per host machine and runs on Windows NT, Solaris and AIX.

www.ibm.com

Who's
Buying What

THE CHASE MANHATTAN BANK CORP. is in New York but it has selected SEBEL SYSTEMS INC.'s Sales Enterprise and Call Center applications for some of its units and branch offices. . . .

Cablevision, Calif.-based WESTERN DATA SYSTEMS (WDS) said the U.S. Department of Defense has extended its contract with WDS for enterprise resource planning software through 2006.

Firewall on Card?

Calluna Technology Ltd. is shipping PC Bodyguard, a PC Card designed to protect small- and branch-office systems from hackers and viruses. The standard expansion card connects between a PC's hard disk and motherboard and features an independent microprocessor that acts as a firewall, the San

Jose, Calif., company said. The card costs \$199. www.calluna.com

Oracle Data
Analysis Tool

Hardball Software Inc. is shipping ViewShark 2.0, software designed to allow users to examine data in Oracle Corp. databases, merge data from multiple tables and save it in a variety of flat-file formats, including Excel and HTML, the Internet programming language.

The software costs \$5,000 for 10 concurrent users.

www.hardballinc.com

MQSeries Tool
For Alpha

Customers running IBM's MQSeries message-oriented middleware on Alpha-based hardware can now use NovTel Technologies Inc.'s MQControl agent, which previously wasn't available for the Alpha. The software allows customers to manage MQSeries queues from anywhere on the network, including functions such as configuration and change management, performance monitoring and message management.

Pricing starts at \$20,000. www.novtel.com

Shomiti Ships
Rmon2 Probes

Shomiti Systems Inc. in San Jose, Calif., last week announced one- and two-port versions of its Hopper family of remote monitoring-2 (Rmon2) probes for 10M to 100M bit/sec. Ethernet probes. Information gathered will help network technology managers monitor traffic and traffic patterns, create baselines and assist in troubleshooting.

Pricing starts at \$3,250 per port. www.shomiti.com

FRANKLY SPEAKING/FRANK HAYES

Look beyond the
(Big) Blue Devils

RIGHT ABOUT NOW, lots of you probably aren't thinking much about technology. You're thinking about tonight, when some combination of Ohio State, UConn, Michigan State and Duke will be battling it out for the NCAA men's basketball championship. What a waste. No, I don't mean basketball, or even all that time you spent filling out sheets for the office pool. I'm talking about all those games wasted whittling 64 teams down to just the Final Four. Three of them were top-ranked teams anyhow. It would have been a lot more efficient just to let the four top-ranked teams play over one weekend instead of spreading the competition out over almost three weeks.

That's the thing about competition. It's inefficient.

Real competition involves lots of wasted effort. Duplicated effort. Effort that just isn't going to pan out in the end. In other words, inefficiency.

Sure, conventional wisdom says the top-ranked team is the best. But finding out for sure — eliminating the other 63 teams — takes 63 games. There really isn't any more efficient way of doing it.

Which brings us around to what you're supposed to be thinking about right now — choosing the right technology products. And that, it turns out, isn't much more efficient than finding a basketball champion one game at a time.

Face it: The most efficient way of buying an IT product is to get the biggest name. That's highly efficient buying. There's no effort wasted in testing products you won't end up buying, no time lost making sure the products will meet users' needs, no energy burned up discovering hidden gotchas in your company's corporate policies.

Efficient, sure. But your job isn't just to buy efficiently. It's to buy the right IT products to make your users more successful and your company more profitable.

And if all you do is make no-brainer buys from the short list, you're losing opportunities to deliver real business advantages from IT.

See, competition among IT vendors is every

bit as inefficient as a big college basketball tournament. Vendors are all out there independently reinventing their particular wheels. There's lots of duplicated effort for the features your users need — and wasted effort, at least from your point of view, on features you don't need or want.

That's highly inefficient for the vendors — but it means you've got a much wider range of product choices. You can choose among SAP and Peoplesoft and Baan and SSA. You can pick from a slew of servers and figure out exactly which combination of features, quality and support makes the most sense for your users' PCs.

But that means inefficiency for you, too. To pick from among all those products, you need to quiz users to find out what they need, test products to see how they meet those needs and navigate corporate IT policies to make sure some department head's hidden agenda won't torpedo your efforts. Most of that testing and research will be "wasted" on products you don't buy. It's highly inefficient compared with buying from the short list.

But take a lesson from the NCAA. The rankings don't always turn out to be right — at least for choosing key systems that could deliver a competitive advantage to your users. Sometimes, the inefficient approach is the only way to find out which product is best.

Otherwise, you'll have nothing more than the same old conventional wisdom that says nobody ever got fired for picking Duke — er, IBM. ▀

Hayes, Computerworld's staff columnist, has covered IT for 20 years, but every March he gets distracted. His e-mail address is frankhayes@computerworld.com.

That's the
thing about
competition.
It's inefficient.



Data Mining

BY STEWART DECK

DATA MINING. You've probably heard of it. Or maybe you've heard of data warehousing. Mining and warehousing are related—warehousing brings your data together for analysis. Mining sorts through the data you've collected and turns up interesting and useful connections.

Understanding data mining may be important to you. After all, Forrester Research Inc. in Cambridge, Mass., predicts that the next two years will see an explosion of data mining projects, with almost four times the number that currently exist, says Frank Gillett, a Forrester analyst.

It all starts with a load of finely detailed historical data that needs to be sifted through for gems. Then, you need to decide what discrete problem you want to solve—increasing direct-mail response rate, finding mortgage customers or boosting grocery sales, for example.

To get through all the data, you need mining tools based on algorithms that scan through the data looking for patterns (such as grocery shoppers buying peanut butter and jelly together).

Most mining tools need to have data in a flat file format in order to start sorting through it, so the data is extracted and put in a flat text file. Then the mining process can begin.

The tools themselves work

DEFINITION

Data mining is a process that finds relationships and patterns within a large amount of data stored in a database. The process uses tools based on algorithms to sift through mounds of data to find relationships.

in a variety of ways. Some are client-based, others are desktop/server. Some, like Right Point Software Inc.'s, have one algorithm that does one type of search. Others, such as SAS Institute Inc.'s offering, include a tool kit of several algorithms.

"Even though mining gives the impression that you can turn a tool loose on the data you have, you need to have a general idea of what you're going after," explains Wayne Eckerson, vice president of technology services at the Data Warehousing Institute in Gaithersburg, Md. "You have to carefully select the variables."

A Fine Line

If you don't include a key variable, you may not get the relationship you're looking for. Too many variables produce too much output, according to Eckerson. But an over-reliance on tools capabilities could lead to trouble, he warns.

There are other areas that could cause problems if not addressed in the beginning stages of a data mining project. You must have someone who knows what they're doing as

your mining expert, says Herb Edelstein, an analyst at Two Crows Corp. in Potomac, Md. "To think you can do data mining without a statistical or mining background is mind-boggling," he says.

Properly selecting which data to include for which searches is imperative. Too much data won't produce useful results, so choices need to be made with a feeling for what can have an effect on the business. For example, a project leader with a statistical background may not understand that a customer's age wouldn't be as good a predictor as an age-to-income ratio.

On the other hand, if the project leader has only a statistical and business background,

he may not understand data storage, transportation and maintenance requirements, Edelstein cautions. Some projects suffer because too much attention is spent on preparing the data instead of refining the mining models.

The key, Edelstein says, is the data. "The real issue in mining is what you do with the data. Without data, all we have are opinions," he says. ■

Are these technologies or issues you would like to learn about in QuickStudy? Please send your ideas to QuickStudy editor Shelia McCann at smcann@computerworld.com.

MORE ONLINE

For more information about data mining visit our Web site: www.computerworld.com/news

Q&A Information Jackpot Was in the Cards

Dick's Supermarkets uses data mining tools from Datasage Inc. in Reading, Mass., to gather purchasing-history information from shoppers' scan cards. The company then uses this data to identify product relationships and customer buying patterns.

Kenneth L. Robb, senior vice president of marketing at Platteville, Wis.-based Brodbeck Enterprises Inc., which operates the eight-store supermarket chain, recently talked to *Computerworld* about the project.

What has data mining done for Dick's Supermarkets?
It has made us smarter about our customers, smarter marketers—and made us more efficient in our marketing and merchandising investments.

What's the basis of a good data mining program?
You have to establish the integrity of your data because that's important to the decisions you'll make. For us, that means getting our customers to use their scan cards with each purchase so that we have good and thorough data about what goes on in our stores.

How do you get them to use their cards and what kind of response rates are you

currently getting?

We developed several incentive programs for customers using the card. We have given away prizes such as lawn mowers and computers. ...Currently, 90% of our total store (sales are) captured by these cards.

Are there some general things you've learned about your sales?
We discovered that 45% of our customers represent close to 90% of our volume. ... Using this information, we can offer the best discounts to the best customers ... so that we deliver value to those customers who represent the bulk of our business.

What else have you learned?
We looked over a year-and-a-half's worth of data and displayed the top product correlations. In our stores we found a



Kenneth L. Robb, senior vice president, marketing, Brodbeck Enterprises


high correlation between yogurt and granola bars and also pie filling and canned milk. So we placed a display of granola bars adjacent to the yogurt and measured a 60% difference in sales between that type of display and a regular display in the store. ■

Warehouse analysis vs. Data mining

Data starts with a hypothesis and then pulls up the data to support that theory. For example, you ask the warehouse to show your largest customer purchases because you think that will show who is most likely to buy pricey items.

This process creates the theory. Tools sift through the data for indications of who is likely to buy expensive items—maybe it's the people who've bought expensive fridges before, but maybe it isn't. You can then take your findings and market your products to the specific names the tools dug up.

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First Dibs for HOT TRAFFIC

A new generation of tools reserves the most bandwidth for the most critical apps By Scott Mace

WHEN COSTS WERE RISING at Ciba Specialty Chemicals, yet users in the Santiago, Chile, office found that their connections to the Sao Paulo, Brazil, office were being dropped as the network timed out.

The situation puzzled network manager Marco Bombardi because Santiago had a 64K bit/sec. satellite data link to Ciba's Tarrytown, N.J., office, which in turn was linked to Sao Paulo by a 128K bit/sec. leased line. "I had no idea if I was using the full bandwidth or just part of the bandwidth," Bombardi says.

Decrypting the information collected by his Cisco Systems Inc. routers was daunting, as was the cost of hiring an outside firm to analyze the problem. But Bombardi used one of a new generation of network-tuning tools to throttle back transmissions on an application-by-application basis.

The device, PacketShaper from Cupertino, Calif.-based Packeteer Inc., not only helped him erase the bottleneck but also let him redesign the network so it provided more reliable service to critical traffic and saved Ciba \$125,000 per year in telecommunications costs. Not a bad return for \$20,000 invested in packet prioritization technology and staff labor.

Ciba's problems aren't unique. Internet technology is evolving from just faster pipes and connections to more intelligent

MARCO BOMBARDI
uses
PacketShaper
to control the
amount of data
sent over the
network.

BY SCOTT MACE FOR CWA

to more intelligent ones. For years, companies have proposed various schemes for prioritizing critical traffic, but somehow the growth in available bandwidth always kept such schemes on the back burner.

Now the growth of the Internet is overwhelming even the most ambitious bandwidth expansion, and the day of products such as PacketShaper has arrived. PacketShaper, one of the first tools to provide rate control for TCP/IP networks, let Bombardi tailor network performance to the importance of the data being carried. After installing PacketShaper, Bombardi could see and control bandwidth utilization for each connection.

A little detective work soon revealed that time-outs came most often during lunchtime in Sao Paulo, when users turned to Web surfing. "Whenever someone decided to perform a big download or send an e-mail with a large attachment, people using our business-critical applications at the remote sites would feel it," Bombardi says. "Our 5250 Attachmate traffic to the AS/400 host in Sao Paulo was suffering because of all the bandwidth-hungry traffic sharing the line."

He easily solved the problem by giving his AS/400 application higher priority than file downloads and HTTP traffic. Now, "even if all my Sao Paulo users are using the Internet at lunchtime, they will not get more than 64K of my 128K link," he says.

Paying Too Much

Not only are the Chile office's connections more reliable, but "we found we were paying for more bandwidth than we were using," Bombardi says. A 2M bit/sec. link to Taboara, Brazil, needed only 256K bit/sec., and the 256K bit/sec. Rio de Janeiro connection could be downgraded to 64K bit/sec.

Bombardi's new redesigning the wide-area network. PacketShaper can prioritize critical network traffic there, too, and can even be used as a simulation tool before Ciba switches to the less-expensive lines, Bombardi says.

Like Ciba, Kendall Electric Inc., an electrical components distributor in Battle Creek, Mich., needed a way to give mission-critical applications priority over Web traffic. Mission-critical in this case meant a point-of-sale application running in 23 remote offices in Michigan and Indiana, tied to head-quarters via frame relay.

Networking specialist Chris Myer turned to NetRoad TrafficWare from Utah Software Inc. in Campbell, Calif., for relief. Software that runs on a Windows NT server, NetRoad sits between the company's router and its corporate LAN. Controlling Web traffic at the router lets critical traffic from remote

Even if all my Sao Paulo users are using the Internet at lunchtime, they will not get more than 64K of my 128K link.

MARC BOMBARDI, NETWORK MANAGER,
CIBA SPECIALTY CHEMICALS

offices get back to Kendall's AS/400.

Myer established application priority policies using NetRoad TrafficWare, then observed them in action through the software's monitoring tools. "Instantly, we were able to see results and reap the benefits" in quicker application response time, Myer says.

Although Kendall initially didn't reap telecommunications savings, NetRoad TrafficWare has paved the way for voice over frame relay, which should pay off. Currently, 30 outgoing phone extensions aren't enough to handle the volume of leased-line calls being routed through Kendall's headquarters.

With switched voice over frame relay and bandwidth assured by the Utah product, Kendall won't have to sweat whether it's going to max out its phone system or have to be subjected to chaotic Internet congestion conditions.

Network service providers are also noticing the potential of the new classification technologies. Toronto-based Stanchem Inc. turned to GE Capital IT Solutions, based in Northern, Ky., to give its SAP traffic priority on its WAN, which connects 30 business sites and 500 employees across Canada. "We've told them that any traffic going through certain IP addresses gets first dibs," says Reid Andrews, information technology manager at Stanchem, a \$200 million chemical distribution company. For a cost that Andrews estimates at \$20 per user per month, GE Capital ensures that SAP traffic and key procedures and regulations kept online in corporate manuals get priority over Stanchem's other network traffic.

"You're always wrestling with bandwidth," Andrews says. "[There are] three contenders for it in today's world. First is your transaction system you're using to run the business. Second is voice traffic. Third is the overwhelming

demand, it would seem, for Internet access, whether for simple e-mail, corporate Web browsing or some other sort of business activity on the Web."

Similar capabilities are spreading to other network technologies. Asynchronous Transfer Mode (ATM) networks for years have trumpeted Quality of Service (QoS) features which go beyond mere prioritization to guaranteed end-to-end bandwidth for specified applications. A major goal of Internet 2, the next generation of academic Internet connectivity, is to provide ATM-like QoS, even in networks that appear to be IP-only.

The New York State Educational Research Network (NYSERNet), which ties together the major universities and

research institutions in New York state, is building an OC12 network using Newbridge Networks Corp.'s ATM switches in the network's core. NYSERNet selected Kanata, Ontario-based Newbridge because of its ability to classify traffic and QoS features, says Mark Oros, chief operating officer at NYSERNet.

Eventually, NYSERNet will implement service-level agreements between it and member institutions, with assurances that various applications will get assured levels of service. As the research project progresses into mainstream use, the institutions stand to reap enormous cost savings from collapsing multiple existing voice and data streams onto a single backbone.

Newbridge is mapping IP-type service levels to ATM QoS. Oros says, "They are also working on the Multi-Protocol Label Switching standard and will be adopting that, which will give us our interoperability with other vendors."

Working with Newbridge and its member institutions, NYSERNet plans to create an application database. "We're very interested in having the application requirements drive our technical needs," Oros says.

That's a switch: a network built around the requirements of applications instead of the other way around. Oros recalls doing early priority queuing of traffic on the National Science Foundation's network in 1987. But this time, business imperatives, not mere curiosity, is driving the technology. ■

Mace is editorial director at Standart Forum Inc. in Campbell, Calif. His e-mail address is smace@standart.com.

Not Bigger Pipes - Smarter Pipes

It's not the size of the pipe that matters - data traffic will always exceed available bandwidth. What does matter is whether the vital traffic gets through and less-critical requests get a crack at leftover bandwidth. TQIP, the network protocol of choice, wasn't designed to reserve bandwidth for mission-critical operations or for efficiently managing transmission speeds between sender and recipient. Instead, TQIP traffic expands to fill the available bandwidth. If data is being transmitted faster than it can be accepted, overflowing packets are discarded, forcing time-wasting retransmissions.

Enterprise administrators employ a variety of technologies to overcome these traps and deliver appropriate quality of service to users. Most involve around queuing, which can be done by adding software to the network server or existing routers and bridges or by installing a queuing device on the network. There are many queuing methods available, and virtually all of them watch data packets after they enter the network, com-

paring them against an administrator-defined policy database and placing them in a queue according to importance. The system permits critical packets to proceed immediately, less-important data is held back in the queue until bandwidth becomes available.

Utah Software Inc.'s NetRoad TrafficWare, for example, can discriminate between application types, file type and delivery requirements. It also offers a graphical packet-monitoring system that can make it easier to determine traffic priorities.

Packeteer Inc. took a different route with PacketShaper. The device controls the flow of data traffic using the company's proprietary IP Rate Control technology. Besides classifying the type of data, PacketShaper also notes the speed of the packet and the current traffic conditions on the network, then allocates bandwidth to each packet by controlling transmission speed and can instruct the sending device to throttle back on transmissions to prevent packet loss.

-Cynthia Murray

Learning to Share

BY MARY BRANDEL

IN THE LATE 1950s, and you're a computer operator at MIT running a long job on a computer donated by IBM. The phone rings. It's a request from the president of IBM — who races big yachts on Long Island Sound — to run the program that assigns handicap points to the boats.

That request means you have to abort the job that's running, mount a new tape and then restart the current job from scratch.

Or maybe you're a computer programmer. It's late afternoon, and you're picking up the results of the computer program you dropped off this morning. The printout contains an error message. After waiting all day for your program's results, you discover you have left out a comma.

It was in that type of environment that John McCarthy, a professor at MIT, submitted a memo to Philip Morse, then the director of the MIT Computation Center, outlining a new concept called "time-sharing." Unlike batch processing, where programmers submitted programs on punch cards to a computer center, this new mode of computing promised to make computers more accessible to, and interactive with, users.

Encouraged by Morse to pursue the idea, an associate professor named Fernando Corbato and his team developed the Compatible Time-Sharing System (CTSS) in 1961, which was the first demonstration of how time-sharing could be done.

Simply put, time-sharing enables a computer to serve many users simultaneously, so that each person feels like he's using his own private computer.

Functionally speaking, a time-sharing computer stops a long job, copies its memory to a place on a disk, runs some-



Fernando Corbato, then an associate professor at MIT, and his team developed the Compatible Time-Sharing System, the first demonstration of how time-sharing could be done.

thing else and then starts up the long job again — without interrupting the user. "Each user's program has access to the full resources of the machine, and several programs can share time on the machine," explains Tom Van Vleck,

who was a junior member of the CTSS team and a developer of Multics, a successor to CTSS.

In addition, computing is interactive. Programmers create programs on the keyboard, and the computer responds almost immediately, with results or error messages.

Although that sounds quite

rational to the 1990s user, not even the hardware was prepared for such a radical concept in 1961. For instance, the IBM 7090 used by Corbato's team lacked a keyboard.

"Fortunately," they were able to get Teletype machines from AT&T Corp. and Selectric mechanisms [IBM Selectric electronic typewriters] from IBM to solve that problem," Corbato says. "But even then, we had to fight for both upper and lower-case letters."

Working with IBM, the team was able to modify a second machine, an IBM 7094, to solve that and many other problems. "Many of these solutions are still in use today," Corbato notes.

They included a hardware timer to interrupt user programs and a way to prevent programs from operating outside of designated memory boundaries.

The 1961 demo was "crude and incomplete," according to Corbato. However, it showed time-sharing to be a feasible concept, and many time-sharing systems would follow the CTSS demo. The finished version supplied time-sharing services to MIT, New England colleges and the Woods Hole Oceanographic Institution.

But most important, the CTSS demo led

to Project MAC. Funded with \$3 million in 1962 by the Advanced Research Projects Agency (ARPA), Project MAC's first goal was to develop a full-fledged time-sharing system, named the Multiplexed Information and Computer System, or Multics.

Multics wasn't ready until 1969, and it never became a commercial success. However, it is important in many ways. For one thing, Ken Thompson and Dennis Ritchie, the inventors of Unix, used many ideas from Multics.

But perhaps most important, time-sharing brought users into the universe of computer design.

"Time-sharing introduced the engineering constraint that the interactive needs of users [were] just as important as the efficiency of the equipment," Corbato says. ■

Brandel is a frequent contributor to Computerworld. Contact her at brandel@cwiw.com.

Technology Happenings

■ The first patient-monitoring system is installed at the National Health Institute Clinic in Maryland.

■ IBM's Stretch (2030) is delivered to Los Alamos National Laboratory in New Mexico. The most powerful computer of its day, Stretch is a pioneer in supercomputer systems, and many of its innovations will be part of the System/360, to be introduced three years later.

■ Hewlett-Packard Co. stock is first offered on the New York Stock Exchange.

■ Control Data Corp. introduces the CDC 160A — a desk-size computer.

■ There are more than 100 computers installed in American universities — up from 25 in 1955.

■ Unimate, the first industrial robot, begins work at General Motors Corp.

Born in 1961

■ Johan Helsingius — founder of anon.penet.fi, anonymous remailer service

■ Diana Spencer, Princess of Wales

■ Dennis Rodman

Other Notables

■ Best Picture: West Side Story

■ The West Side Story soundtrack album hits No. 1 and stays there for 54 weeks, still a record.

■ Pulitzer Prize winner, Fiction: To Kill a Mockingbird, by Harper Lee

■ The Beach Boys are formed. Members are Brian, Dennis and Carl Wilson, Mike Love and Al Jardine



President Kennedy establishes the Peace Corps.

The CIA — along with Cuban exiles — launches the disastrous Bay of Pigs invasion of Cuba.

Roger Maris hits his 61st home run, a single-season record that will stand until 1988.

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Yuri Gagarin of the Soviet Union is the first human to orbit the Earth in a spacecraft.

Alan Shepard Jr. becomes the first American space traveler, spending 15 minutes in space.

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Family-Friendly

St. Louis and Kansas City have a host of IT opportunities and cater to IT professionals with families
By Kim Fulcher Linkins

WHETHER ELSE but in America's heartland could you find an area that's home to Fortune 500 companies like Sprint Inc. and also boasts such achievements as the highest per capita sales of barbecue sauce?

Missouri cities such as St. Louis (where barbecue sauce reigns) and Kansas City are attracting more and more information technology professionals as people try to escape the pressures of big-city life and enter a more family-friendly environment.

Although salaries may not compete with those on the

East or West Coasts, lower housing and living costs translate into a more desirable lifestyle for IT professionals who relocate to Missouri. With no shortage of IT positions, many are heading to America's original Gateway to the West.

Kansas City

Kansas City — where the melt-in-your-mouth-not-in-your-hands M&M candy coating was invented — offers IT professionals plenty of opportunities to put their skills to work.

"We essentially have zero unemployment in the Kansas City area. When it comes to

[data processing], my understanding is that there are 2,000 vacancies in Kansas City and no candidates to staff them," says Scott Mansker, senior vice president in technology solutions at NationsBank Corp.

"Anything related to the midrange world, Windows NT, Unix, Oracle, SAP — any of that stuff — is where there are probably exploding needs and not a whole lot of resources available to meet those needs," Mansker says.

There are also needs for Web designers, consultants, database administrators, LAN maintenance technicians, LAN managers and many other IT positions, according to Ron Williams, assistant regional administrator at the U.S. General Services Administration.

Mansker says he and his family found the area "wonderful" after relocating to Kansas City from Albuquerque, N.M. He cites affordable housing, nationally recognized schools and a good quality of life as attractions. "It's just an ideal environment for family," he says.

Williams cites a short commute as one of his main attractions. "You're very close, compared [with] the hour and a half [each way] that I used to commute to work in Chicago. I live 10 minutes from my office here. It's almost a change in lifestyle," he says.

If you're looking to simplify your life, Kansas City may be the place to go, IT professionals say. "If you're used to being

Regional Unemployment Rates

St. Louis	4.4%
National average	3.2%
National average	4.5%

in the fast lane and living life hard, I guess this probably isn't the ideal town for that," Mansker says. "For somebody like me who's a family guy, that's no biggie."

St. Louis

In St. Louis, original home of the ice cream cone, IT professionals can find a double scoop's worth of employment opportunities.

Kim Crocker, senior employment consultant at General American Life Insurance Co., says one of the challenges of recruiting qualified people to the area is the geography. "When you think about hiring technology people, most people focus on the East and West coasts, so it does make it a little more challenging for recruiting in the Midwest," she says.

But St. Louis companies are meeting their recruitment and retention challenges by offering benefits such as continued training and development, flexible work arrangements, tuition reimbursement programs and more, Crocker says.

Those most in demand are

programmer/analysts at all levels, help desk support people and LAN administrators, industry experts say. Additionally, experts say there's a need for people with experience in client/server and mainframe applications, Internet projects, distributed environments and Web-based development.

Just like anywhere else, salaries vary by job title and experience, IT experts say. However, IT professionals new to the area may find that salaries are lower than in other parts of the country. But with the cost of living also lower, residents can expect more for their buying dollar, experts say.

Crocker says IT professionals can find work in many industries in St. Louis, but the largest demands are in insurance, manufacturing, financial services and, to a smaller degree, technology companies.

Increasingly important to IT professionals these days is finding a job in an area that's good for both work and leisure.

Sandra Petersmeyer, supervisor of technical communications services at MagneTek Inc., a manufacturing firm in St. Louis, says that city fits the bill.

Petersmeyer says the area offers a variety of cultural opportunities such as theater, the arts and the St. Louis Symphony.

Crocker adds that there are a lot of free activities, like the St. Louis Zoo.

"Families really like this area because you can save for your future and do things within the community that aren't going to cost a lot of money," she says. ■

Linkins is a freelance writer in Austin, Texas. She can be reached at kplinkins@aol.com.

Source: COMPTON, THE NEW YORK TIMES, SALARY SURVEY

Network administrator/analyst	\$40K	\$35K	\$30K
LAN manager	\$40K	\$35K	\$30K
Project manager, systems and programming	\$50K	\$45K	\$40K
Senior systems engineer	\$40K	\$35K	\$30K
Senior systems programmer	\$40K	\$35K	\$30K
Senior programmer/analyst	\$40K	\$35K	\$30K
Programmer/analyst	\$30K	\$25K	\$20K
Computer operator	\$20K	\$15K	\$10K
PC technical support specialist	\$20K	\$15K	\$10K

IT CAREERS KANSAS CITY

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Reinsurance Worldwide (L)	20.0	Proton Tech Inc.	-18.9
Cadence Design Systems	20.0	CompuLink (L)	-18.9
Exotic, Inc. (H)	18.1	Storage Technology	-18.0
Network Associates	18.0	Pictetnet	-18.0
Data General	14.9	Mailnet Networks	-12.2
Business Objects SA	9.7	SageNet Technology	-12.0
DOLLAR		DOLLAR	
Qualcomm (H)	23.04	VeriLink Software Corp.	-7.60
Exotic Corp. (H)	18.30	CompuLink	-7.60
Exotic, Inc. (H)	18.20	Supnet Corp.	-7.60
Linework International Group, Inc.	10.80	Logix, Inc.	-6.44
America Online (H)	6.00	Bull South	-5.56
ADC Telecommunications Inc. (H)	6.00	Texas Instruments	-3.31
Microsoft Corp. (H)	8.81	Ameritech Corp.	-3.04
Mac Software	6.76	Trendline	-2.80

WEB SECURITIES FRAUD ON THE RISE

SEC says complaints have increased tenfold

BY HANCOY DILLON

WARY OF THE increasing incidence of fraud in online trading, the Securities and Exchange Commission (SEC) is reminding consumers to watch out for crooked dealers on the road to riches.

Last week, Richard H. Walker, director of the SEC's Division of Enforcement, testified before a Senate subcommittee investigating the rise of Internet securities fraud. Since 1995, the SEC has brought 66 Internet fraud cases to court, the majority during the past 12 months, he said. The SEC's Internet fraud complaint center now receives 200 to 300 complaints each day, up from 20 when it first opened in 1996, he said.

"While these scams are nothing new, the Internet facilitates their perpetra-

tion by virtue of its speed, low cost and relative anonymity," Walker said.

The chairman of the subcommittee, Sen. Susan Collins (R-Maine), called for the hearings to determine whether law enforcement efforts to combat the fraud have been effective and if there's a need for better consumer education.

"[Collins] may look in a month or so to propose legislation to help with the problem," said Felicia Knight, the Senator's press secretary. Knight said the legislation may seek to give the additional resources for enforcement to both the SEC and state security groups. She said Collins may also propose

new tools to police Internet frauds, including ways for consumers to get third-party verification to vouch for sites that offer investment advice. She declined to make specifics.

"The best way to verify claims made on the Internet is to pick up the phone and ask questions.... Call suppliers to a company... to verify any Internet-based claims," said SEC spokesman Duncan King.

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Cadence Design Systems	20.0	CompuLink (L)	-18.9
Exotic, Inc. (H)	18.1	Storage Technology	-18.0
Network Associates	18.0	Pictetnet	-18.0
Data General	14.9	Mailnet Networks	-12.2
Business Objects SA	9.7	SageNet Technology	-12.0
DOLLAR		DOLLAR	
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Exotic Corp. (H)	18.30	CompuLink	-7.60
Exotic, Inc. (H)	18.20	Supnet Corp.	-7.60
Linework International Group, Inc.	10.80	Logix, Inc.	-6.44
America Online (H)	6.00	Bull South	-5.56
ADC Telecommunications Inc. (H)	6.00	Texas Instruments	-3.31
Microsoft Corp. (H)	8.81	Ameritech Corp.	-3.04
Mac Software	6.76	Trendline	-2.80

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CASE DATE

SEC v. Daniel Oshole
(Aug. 24, 1995)

SEC v. StocksToWatch.com
(Oct. 27, 1998)

SEC v. Internet Casino
Sports Gambling
(Jan. 13, 1999)

A mass electronic mailing (spam) solicited would-be investors for a proposed cell farm that promised a whopping 20% return.

An online investment research firm was charged with first predicting that a microcap stock would soar from 96 cents to \$20 per share in 18 months and then selling its shares in the company two days later when the stock hit \$33.1.

Two defendants raised \$2 million for the creation of a virtual casino Web site but allegedly skimmed most of the money for themselves.

KEY WORD: New annual high reached in period
 CLP: New annual low reached in period
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Info, Internet,	Carol Owen (508) 636-4721
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FEATURES WRITERS

Business, technology topics
 Gary H. Arntes (703) 347-0034
 News/Events (540) 650-7792

RESEARCH

Laura Hunt *Strategic research analyst*
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COPY DISK

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GRAPHIC DESIGN

Tom Mordant, **design director** (308) 820-6296, Stephane.Fischer@art-directors.com, **art director/designer**, Mitchell J. Hayes, **art director/designer**, John R. Enfield, Nancy Kawai, David Naught, Mary Beth Walsh, **associate art directors**, April O'Connor, **graphic designer**, Seth Tennant, John Klossner, **craftsmen**.

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Professional computer programmers in the U.S. who are **teen-agers**: **9,000**

Rank of "password" among the most commonly used passwords for PCs and voice mail: **No. 1**

IT professionals and business executives who know what the acronym ERP* stands for: **22%**

Average daily value of customers' online stock trades at www.schwab.com: **\$2.68**

Japanese iMac buyers who are first-time computer owners: **46%**

Average number of roundtrip airline flights made by consultants per year: **45**

*ERP = enterprise resource planning

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